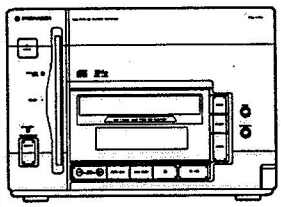
PIONEER®
The Art of Entertainment

Service Manual

• PD-P840F



ORDER NO.
RRV1122

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

FILE TYPE CD PLAYER

PD-P840F
PD-F51

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	The voltage can be converted by the following method.
	PD-P840F	PD-F51		
KUC	○	–	AC 120V	———
KU/CA	–	○	AC 120V	———
RD	○	–	AC 110-127V/220V-240V	With the voltage selector
WB	○	–	AC 220-240V	———
WEM	○	–	AC 220-240V	———

- **This product is a system(s) component. (For PD-P840F)**
  PD-P840F is functioned independently. When perform the system operation ; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.
  This product's instructions are contained within the instruction manual of the related system component(s).
  The manual is packed with those component(s).

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CHAPTER 1

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

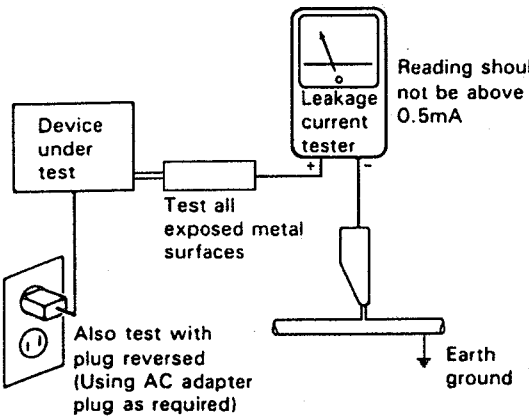
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

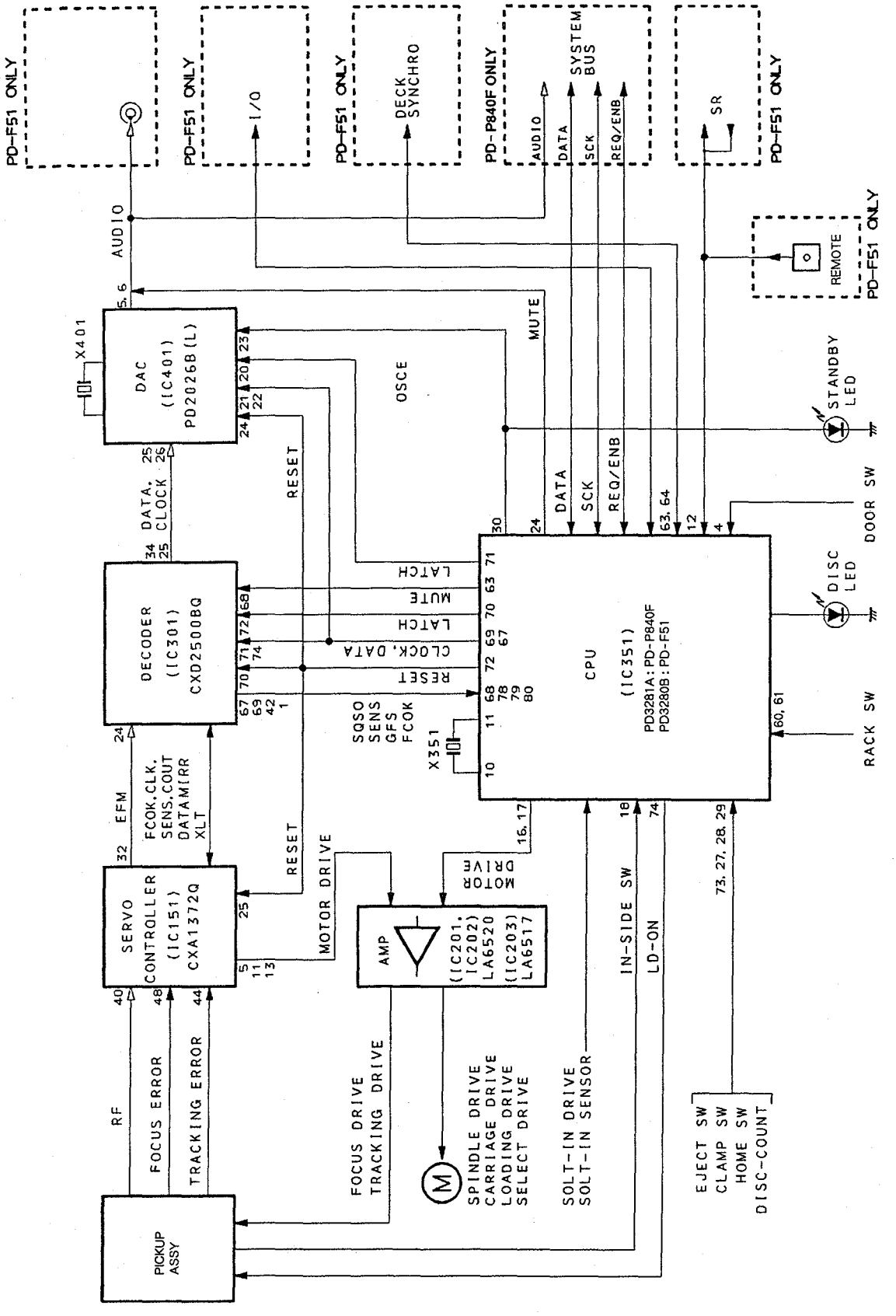
2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

3. BLOCK DIAGRAM



(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

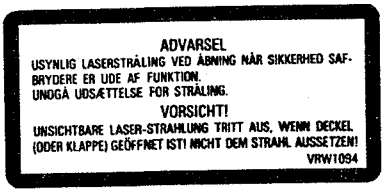
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

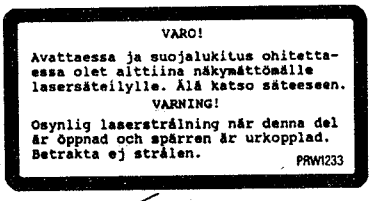
LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK

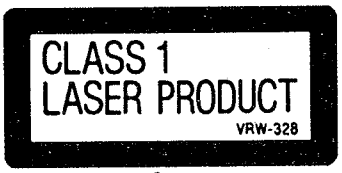
WEM type

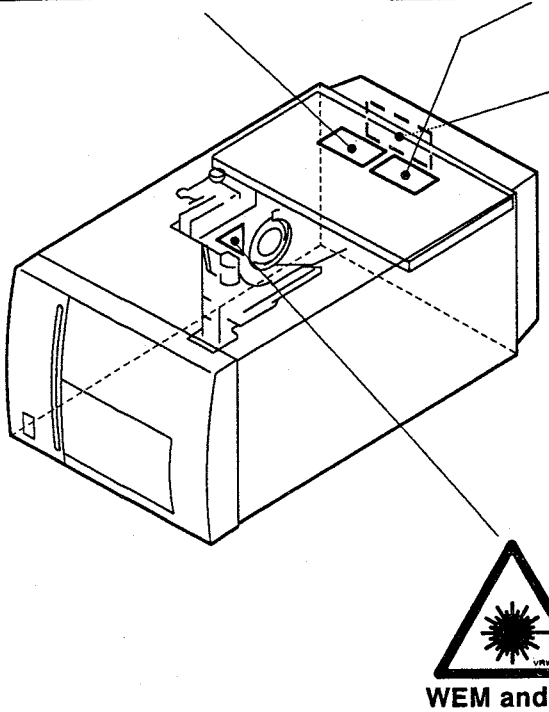


WEM type



WEM and WB types





WEM and WB types

Additional Laser Caution

1. Laser Interlock Mechanism
   The position of the switch [leaf switch (VSK1011) on the LOADING BOARD ASSY] for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switchis not on $\overline{\text{CLMP}}$ terminal side ($\overline{\text{CLMP}}$ signal is OFF or high level.). Thus, the interlock will no longer function if the switch is deliberately set to $\overline{\text{CLMP}}$ terminal side. (low level)
   The interlock also does not function in the test mode ∗. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE - AMP BOARD ASSY mounted on the PICKUP ASSY is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).
2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

∗ : Refer to page 1 - 10.

2. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system

Power requirements
U.S. model ..... AC 120 V, 60 Hz
U.K. model ..... AC 240 Volts~, 50/60 Hz
Multi-voltage model ..... AC 110 – 127/220 – 240 V (Switchable), 50/60 Hz

Power consumption ..... 15 W
Operating temperature ..... +5°C - +35°C (+41°F - +95°F)
Weight ..... 7.3 kg (16 lb 1 oz)
External dimensions ..... 260(W) X 405(D) X 185(H) mm 10-1/4(W) X 15-15/16(D) X 7-5/16(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 98 dB or more (EIAJ)
Dynamic range ..... 96 dB or more (EIAJ)
Harmonic distortion ..... 0.003 % or less (EIAJ)
Level difference between channels ..... 1.0 dB or less (EIAJ)
Output voltage ..... 2 ± 0.3 Vrms (EIAJ)
Wow and flutter ..... less than ±0.001% (W.PEAK) (below measurable level) (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output
Control input/output jacks
CD-DECK SYNCHRO jack
I/O INTERFACE **(PD-F51 ONLY)**

4. Functions

Number of discs to be stored - maximum 50+1.

Basic Operation Buttons
- PLAY, PAUSE, STOP

Playback mode
- PLUS 1 playback mode
- All Playback Mode
- Single Playback Mode
- Custom Playback Mode

Search Function
- Disc Search
- Track Search
- Manual Search

Programming
- Maximum 32 steps
- Pause
- Program Clear (single track or all tracks)

Repeat Functions
- 1 Track Repeat
- Single Repeat
- All Discs Repeat
- Program Repeat
- Single Random Repeat
- All Discs Random Repeat
- Custom Random Repeat
- Custom Repeat

Random Play
- Random Play (repeat also available)

Switching Display
Disc/Track Number, Time Consumed (track/disc), and Total Time

ADLC
Automatic Digital Level Controller

Memory Hold
Stored Playback Mode, Program Contents, or Custom Mode

Last Disc Memory

Direct Search with the Digit buttons (remote control unit)

Power On/Off (remote control unit)

CD-DECK SYNCHRO jack

Remote Control jack

5. Display

FL Tube Display
- Play indicator
- Pause indicator
- Playback Mode indicators (all, single, custom)
- Elapsed Time Display (min, sec)
- Total Time Display
- Disc Number, Track Number
- Program Step Number
- Custom Number
- Repeat indicator
- Random indicator
- Program indicator
- ADLC indicator

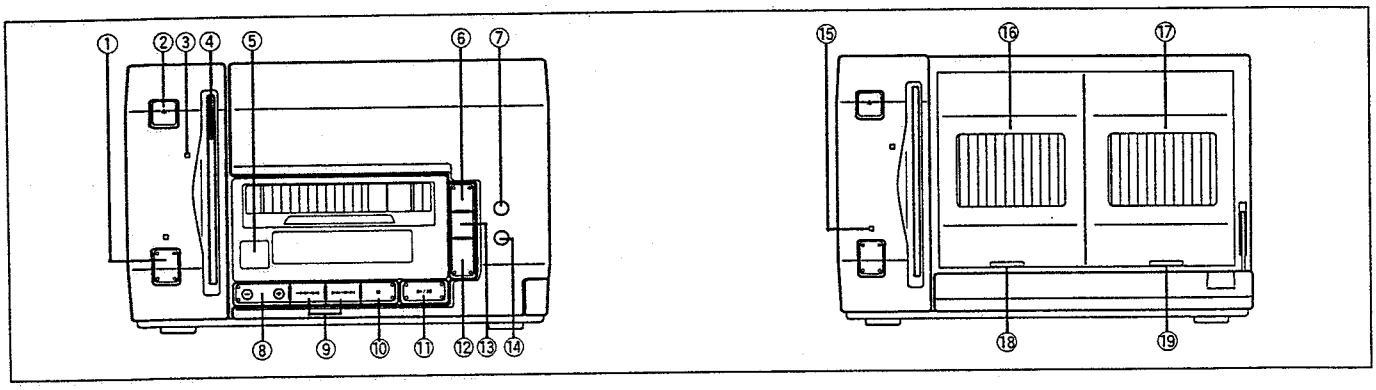
6. Accessories (PD-F51 ONLY)

- Remote control unit 1
- AAA/R03 dry cell batteries 2
- Output cable 1
- Control cable 1
- CD liner notes file 1
- Index label sheet 1
- Electrostatic charge removal sheet 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

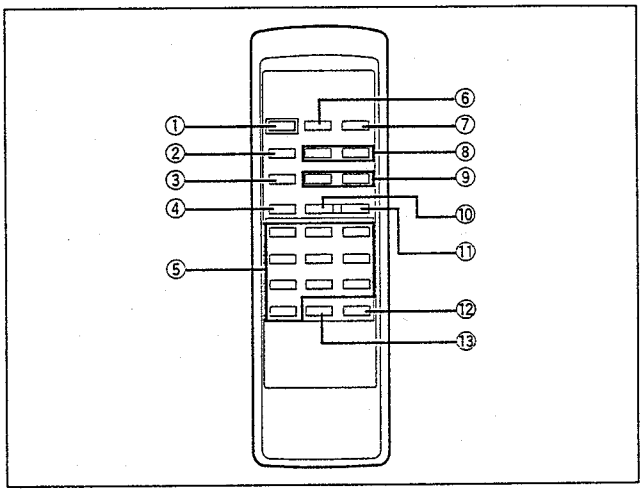
3. PANEL FACILITIES

FRONT PANEL



① **POWER STANDBY/ON switch**
② **EJECT button (▲)**
③ **Plus 1 disc indicator (DISC SET NO. 0)**
④ **PLUS 1 slot**
⑤ **Remote sensor**
Receives the signal from the remote control unit.
⑥ **TIME button**
⑦ **ADLC button**
⑧ **DISC NUMBER buttons (–/+)**
⑨ **Track/Manual search buttons**
(⏮◀◀ / ▶▶⏭)
⑩ **Stop button (■)**
⑪ **Play/Pause button (▶/II)**
⑫ **MODE button**
⑬ **CLEAR button**
⑭ **RANDOM button**
⑮ **STANDBY indicator**
⑯ **Rolling RACK 1**
⑰ **Rolling RACK 2**
⑱ **EJECT button for RACK 1 (▲)**
⑲ **EJECT button for RACK 2 (▲)**

REMOTE CONTROL UNIT (PD-F51 ONLY)



Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

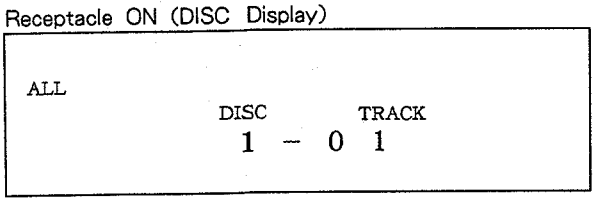
① **POWER button**
② **PGM button**
③ **MODE button**
④ **Stop button (■)**
⑤ **Digit buttons (0 - 9)**
⑥ **REPEAT button**
⑦ **RANDOM button**
⑧ **DISC buttons (–/+)**
⑨ **Track search buttons (⏮◀◀ / ▶▶⏭)**
⑩ **Pause button (II)**
⑪ **Play button (▶)**
⑫ **TRACK SET button**
⑬ **DISC SET button**

4. OPERATING DESCRIPTION

1. Power Supply Receptacle ON

When the mechanism is not at the home position when the power supply receptacle is switched ON, it will return to the home position, the mechanism will be returned and stop will be executed with the following display.
The normal play mode will be <ALL> mode when no mode specification has been made.

Receptacle ON (DISC Display)



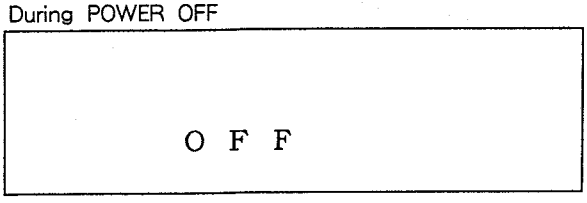
For these models, any disc in the slot-in part will be ejected. However, the disc will be loaded if it is in an intermediate position.
When a disc is in the ejection completion position and the mechanism is not at the home position, the disc will be pulled in and the mechanism will return to the home position.

2. POWER ON/OFF (main unit and remote control)

2.1 POWER OFF

1. When the POWER key is pressed at the time of POWER ON, the entire FL will go out, the standby LED will light, and power OFF condition will be reached.
2. Except for the POWER key and the ⏏ (+1EJECT) key, all other keys are disabled during POWER OFF.
3. When the POWER key is pressed during play, during search, etc., the operation will be stopped, the +1 disc will clamped when there is a disc in the slot-in part, and when there is no disc in the slot-in part, the power will be switched OFF at the home position in return condition.
   At this time, "OFF" is displayed at the 7-segment display to indicate that POWER OFF is being executed.

During POWER OFF



4. The play mode, the program, the customer, and the last disc are kept even when POWER OFF is executed.

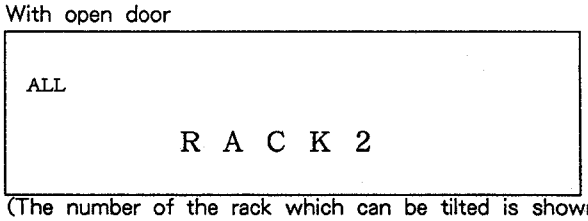
2.2 POWER ON

1. When the POWER key is pressed at the time of POWER OFF, the FL will light, the standby LED will go out, and all keys will be enabled.
2. When a +1 disc is slotted in at the time of POWER OFF, POWER ON will be executed and the disc will be pulled in .
3. The disc No. at the time of POWER OFF will be displayed, and when then the ▶ / ❙❙ (PLAY/PAUSE) key is pressed, that disc will be searched and played.
   (Last Disc Memory specifications)
4. When the ⏮ • ◀◀ (TRACK BACK) key is pressed within 1 sec after POWER ON, the business demonstration display will be started. When a key is pressed or the door is opened, the demonstration will stop and return will be made to the original display.

3. Door and Rolling Rack Open

1. As play operation is continued even when the door is opened, disc exchange is possible even during playback, but as the rolling rack with the mechanism behind it can not be tilted, the discs in that rack can not be exchanged.
2. While the door is open, the number of the rolling rack which can not be tilted is displayed on the 7-segment display. (Only "RACK" is displayed when all racks can be tilted.)

With open door



(The number of the rack which can be tilted is shown.)

3. When the door is opened during selection or loading, the operation will be interrupted temporarily. The operation will be started again after confirmation that the door has been closed.
   Accordingly, when the ▶ / ❙❙ (PLAY/PAUSE) key or the RANDOM key is pressed while the door and the rolling rack is open, play operation will not begin. Play will be started after confirmation that the door has been closed.

4. When a rolling rack is tilted, the disc existence information for that part, the program write information, and the random erasure information are cleared.
   (The customer writing information is not cleared.)
   When at this time all written information is cleared in <PROGRAM> mode, <ALL> mode will be entered.

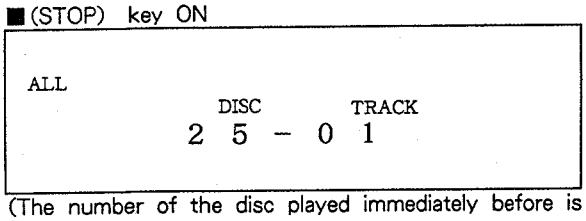
4. PLAY/PAUSE (main unit)

1. When the ▶/❙❙ (PLAY/PAUSE) key is pressed during STOP, play will be started for PLAY key.
   When the ▶/❙❙ (PLAY/PAUSE) key is pressed during normal, random and program play operations, Play and Pause will be changed for PAUSE key.
2. When the ▶/❙❙ (PLAY/PAUSE) key is pressed during program is engaged in the normal play, program play will be started. (It is not operation for PAUSE key.)

5. STOP (Last Disc Memory specification) (main unit and remote control)

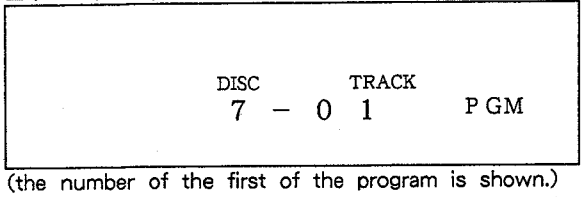
1. When the ■ (STOP) key is pressed during play, the number of the disc played immediately before will be displayed, the +1 disc will be clamped when there is a disc in the slot-in part, and when there is no disc in the slot-in part, stop will be executed at the home position in return condition.
2. When the ▶/❙❙ (PLAY/PAUSE) key is pressed again, the previously played disc will be searched and played (Last Disc Memory).
   When a program has been set up, the number of the first disc in the program will be displayed, and when then the ▶/❙❙ (PLAY/PAUSE) key is pressed, play will start from that disc.

■ (STOP) key ON



(The number of the disc played immediately before is shown.)

■ (STOP) key ON (with a program)



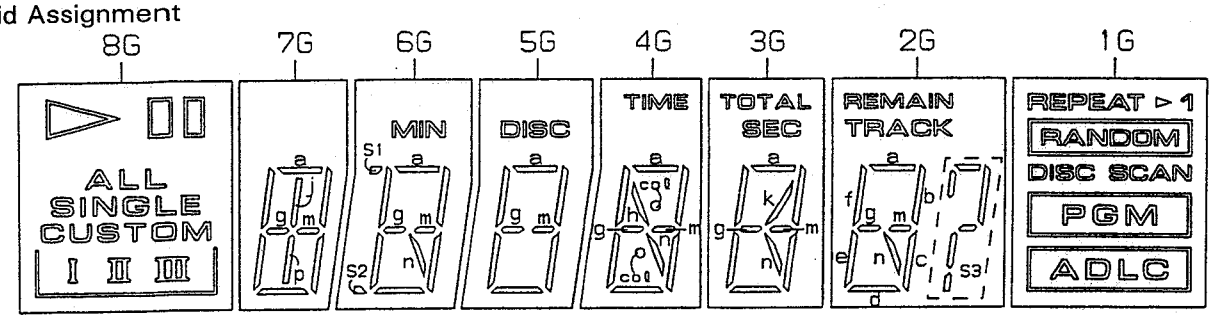
(the number of the first of the program is shown.)

3. Last Disc Memory applies for all modes, <ALL>, <SINGLE>, and <CUSTOM>.
   (However, this applies only for normal play.)
4. When the ■ (STOP) key is pressed during repeat or pause ON, repeat or pause also will be cancelled.
   When the ■ (STOP) key is pressed during stop in <PROGRAM> mode, <PROGRAM> mode will be cancelled (when a program has been written, this also will be cleared), and <ALL> mode will be entered.

5. FL INFORMATION

PEL1079 (V701 : DISPLAY BOARD ASSY)

- **FL Tube**
- Grid Assignment

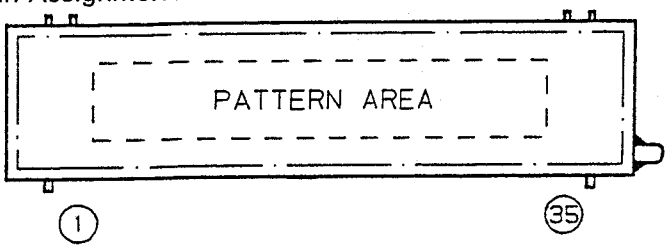


- Pin Connection

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
CONNECTION	F1	F1	NP	P5	P6	P7	P8	P1	P2	P3	P4	P9	P10	P11	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	8G	7G	6G	5G	4G	3G	2G	1G	NP	F2	F2

NOTE 1) F1,F2 --- Filament
2) NP ------ No pin
3) DL ------ Datum Line
4) 1G~8G --- Grid

- Pin Assignment



- Anode Connection

	8G	7G	6G	5G	4G	3G	2G	1G
P1	ALL	a	a	a	a	a	a	RANDOM
P2	SINGLE	b	b	b	b	b	b	-
P3	I	c	c	c	c	c	c	-
P4		d	d	d	d	d	d	ADLC
P5	II	e	e	e	e	e	e	PGM
P6	CUSTOM	f	f	f	f	f	f	DISC
P7	-	g,m	g,m	g,m	g,m	g	g,m	SCAN
P8	-	-	S1,S2	-	col	m	S3	-
P9	III	j,p	n	-	h,n	k,n	n	-
P10	▷	-	MIN	DISC	-	SEC	TRACK	▷1
P11	□□	-	-	-	TIME	TOTAL	REMAIN	REPEAT

6. ADJUSTMENTS

6.1 Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6 (FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2 (TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)

● **Abbreviation table**

FCS. ERR :Focus Error
TRK. ERR :Tracking Error
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low pass filter (39kΩ +0.001 μF)
5. Resistor (100 kΩ)
6. 8cm disc (With at least about 20 minutes recording)
7. Standard tools

● Test Point and Adjustment Variable Resistor Positions

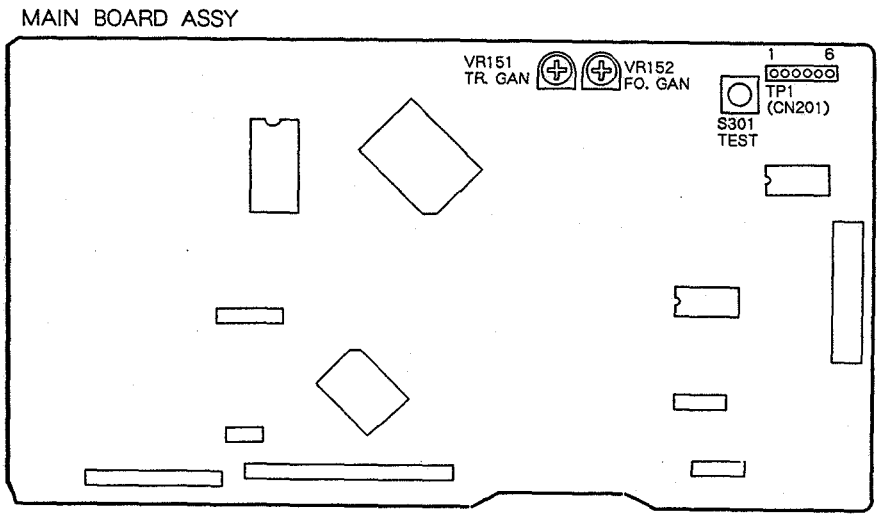


Figure 1. Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.
1. Unplug the power cord from the AC socket.
2. Press the TEST mode switch (S301). (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from Test Mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	MODE	Closes focus servo after the disc is clamped.	After the first disc is clamped, the laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.
▷/ ▯▯	PLAY/PAUSE	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom occurs.
		Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function In Test Mode	Explanation
⏮ • ◁◁	TRACK / MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▷▷ • ⏭	TRACK / MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. At this time, return the disc to the rack and the mechanism back to its original position.

Note : When the first disc in the test mode. (Other discs cannot be selected.)

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

MODE	Lights up the laser diode and closes the focus servo after the first disc has been clamped.
⇩	
PLAY/PAUSE ▷/ ⏸	Starts the spindle motor and closes the spindle servo.
⇩	
PLAY/PAUSE ▷/ ⏸	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Verification

● Objective ● Symptom when out of adjustment	Verify the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) None None needed
[Procedure] Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is 0 ± 50 mV.			

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

2. Tracking Error Balance Verification

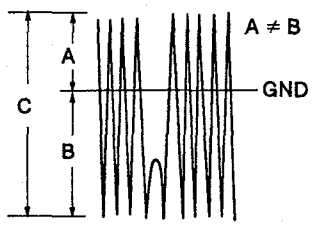
● Objective ● Symptom when out of adjustment	To verify that there is no variation in the sensitivity of the tracking photo diode. Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open None YEDS-7

[Procedure]

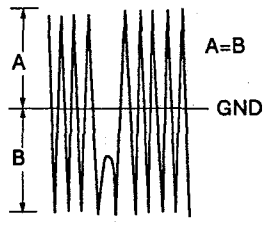
1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key.
2. Press the MODE key, then the PLAY/PAUSE ▷/ ▯▯ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

When $A \geqq B$, $\frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$

When $A < B$, $\frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$



When there is a DC component



When there is no DC component

3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state	Test mode, play
		● Adjustment location	Pickup radial tilt adjustment screw and tangential tilt adjustment screw
		● Disc	8 cm disc (With a least about 20 minutes recording)

[Procedure]

1. Press the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key to move the pickup to the external circumference of the disc.
2. Press the MODE key, the PLAY/PAUSE ▷/ ▯▯ key twice in that order to close the respective servos and put the player into play mode.
3. First, adjust the radial tilt adjustment screw with the Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
4. Next, adjust the tangential tilt adjustment screw with the Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
5. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
6. When the adjustment is completed, lock the radial and tangential adjustment screw.

Note : Radial and tangential mean the directions relative to the disc shown in Figure 2.

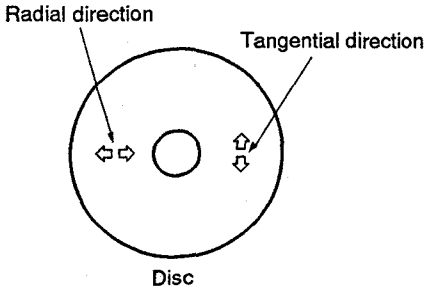
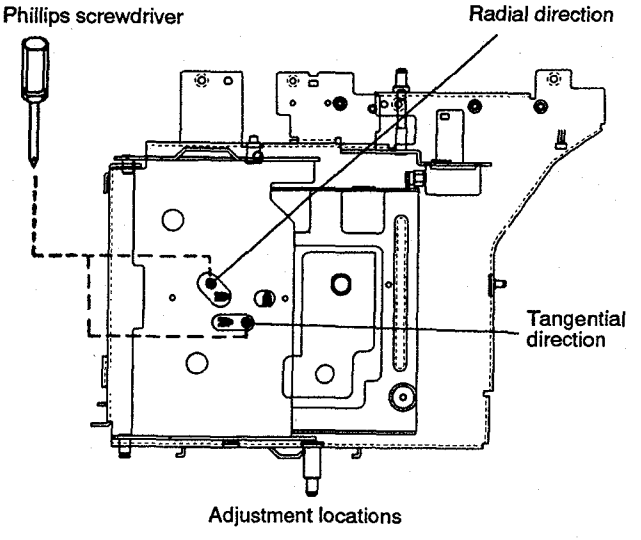


Figure 2



6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 5. [Settings] CH1 CH2 50 mV/division 20 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the MODE key, the PLAY/PAUSE ▷/ ▯▯ key twice in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

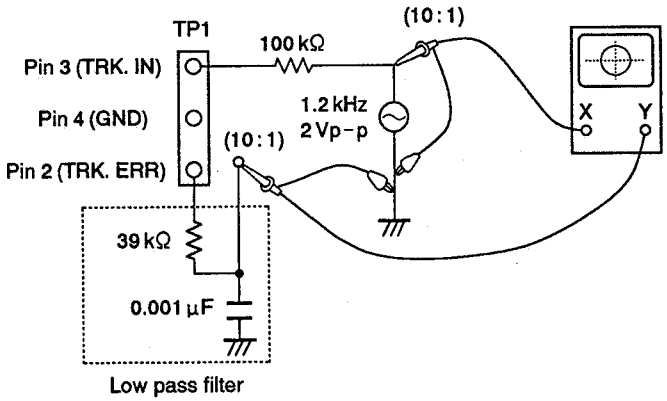
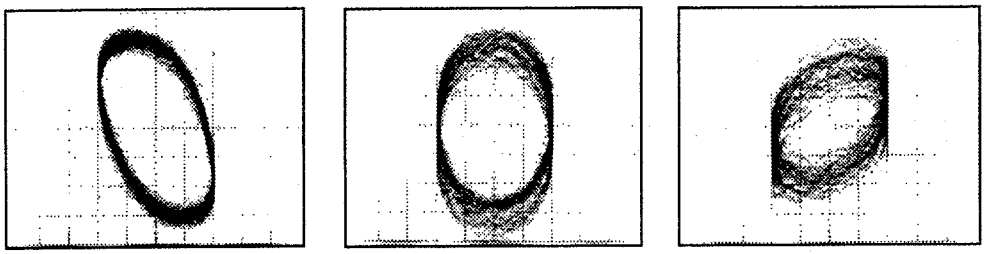


Figure 5

Tracking Gain Adjustment



Higher gain | Optimum gain | Lower gain

7. PARTS LIST FOR EXPLODED VIEWS AND PACKING

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

1. EXTERIOR SECTION

Mark	No.	Description	Part No.
	1	MAIN board assy (PD-P840F/KUC, WEM, WB and RD)	PWZ2697
	1	MAIN board assy (PD-F51/KU/CA)	PWZ2696
NSP	2	BUS board assy (PD-P840F/KUC, WEM, WB and RD only)	PWZ2712
	3	POWER board assy (PD-P840F/KUC and PD-F51/KU/CA)	PWZ2784
	3	POWER board assy (PD-P840F/WEM and WB)	PWZ2786
	3	POWER board assy (PD-P840F/RD)	PWZ2785
NSP	4	JOINT board assy	PWZ2795
NSP	5	Single loading mechanism assy	PXA1540
NSP	6	Loading mechanism assy	PXA1535
NSP	7	Rack base assy(50)	PXA1551
	8	Disc rack assy	PXA1565
NSP	9	Top guide	PNW2405
	10	Guide plate	PNB1476
	11	Guide spring	PBH1177
NSP	12	Rack	PNW2404
	13	Rack label	PRW1382
⚠	14	AC power cord (PD-P840F/KUC and PD-F51/KU/CA)	PDG1015
⚠	14	AC power cord (PD-P840F/WEM)	PDG1008
⚠	14	AC power cord (PD-P840F/WB)	PDG1021
⚠	14	AC power cord (PD-P840F/RD)	PDG1056
⚠	15	Cord stopper (PD-P840F/KUC and PD-F51/KU/CA)	CM-22C
⚠	15	Cord stopper (PD-P840F/WEM, WB and RD)	CM-22B
⚠	16	Power transformer(AC120V) (PD-P840F/KUC and PD-F51/KU/CA)	PTT1297
⚠	16	Power transformer (AC220-240V) (PD-P840F/WEM and WB)	PTT1298
⚠	16	Power transformer (AC110-127V/220V-240V) (PD-P840F/RD)	PTT1299
	17	Rack panel	PNW2406
NSP	18	Crick plate	PBK1133
NSP	19	Hold rubber	PEB1116
	20	Screw	Z39-024
	21	Lever switch	DSK1003
	22	22P Flat flexible cable/30V	PDD1157
	23	34P Flat flexible cable/30V	PDD1159
	24	Rubber spacer	PEB1275
NSP	25	Under base	PNA2113
	26	Bonnet G (PD-P840F/KUC, WEM, WB and RD)	PYY1180
	26	Bonnet B (PD-F51/KU/CA)	PYY1181
NSP	27	Rear base SU (PD-P840F/KUC, WEM and WB)	PNA2115
NSP	27	Rear base SR (PD-P840F/RD)	PNA2165
NSP	27	Rear base 51U (PD-F51/KU/CA)	PNA2164
	28	PCB angle	PNB1468
	29	Side angle	PNB1469
	30	Escutcheon angle	PNB1503
	31	FFC holder	PNM1238
NSP	32	PCB holder	PNW1861
	33	Rear cover (PD-P840F/KUC)	PNW2448
	33	Rear cover 84E (PD-P840F/WEM)	PNW2504
	33	Rear cover 84B (PD-P840F/WB)	PNW2505
	33	Rear cover 84R (PD-P840F/RD)	PNW2506
	33	Rear cover 51U (PD-F51/KU/CA)	PNW2503
	34	Roller	PNW2468
NSP	35	Locking spacer 40	PNW2488
NSP	36	PCB spacer	PNY-404
	37	Foot assy	PXA1201
	38	Cord clamper	RNH-184
NSP	39	Locking card spacer	VEC1596
	40	Screw	PBA1085
	41	Eject spring	PBH1205
	42	Wire spring	PBH1182
	43	Rope unit	PBL1006

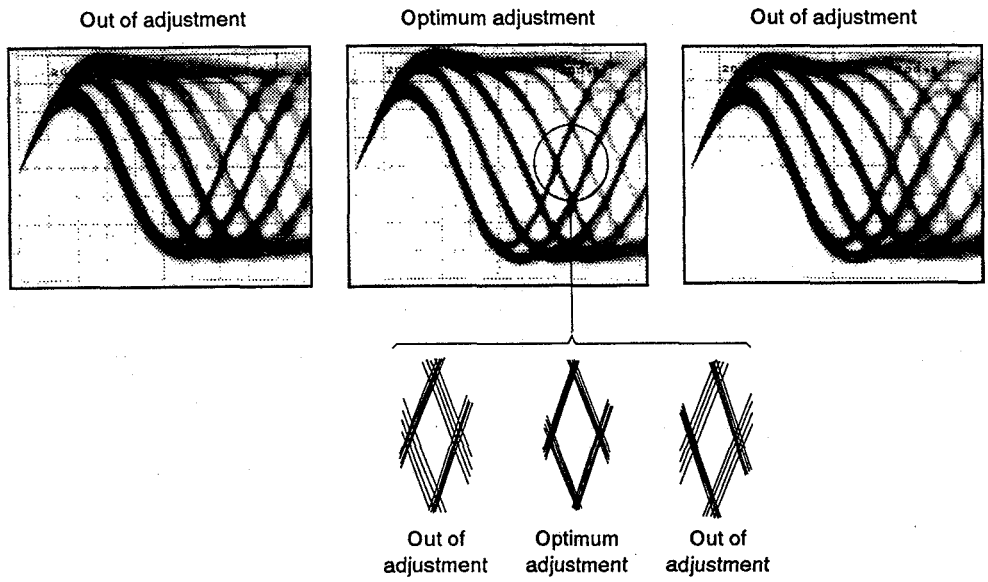


Figure 3. Eye pattern

4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play None YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key, then press the MODE key, the PLAY/PAUSE ▷/ ▯▯ key twice in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is 1.2 Vp-p ± 0.2 V.

5. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD ▷▷ • ▷▷| or REV |◁◁ • ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the MODE key, the PLAY/PAUSE ▷/ ▯▯ key twice in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

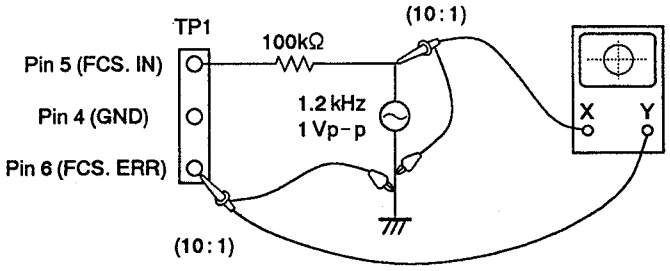
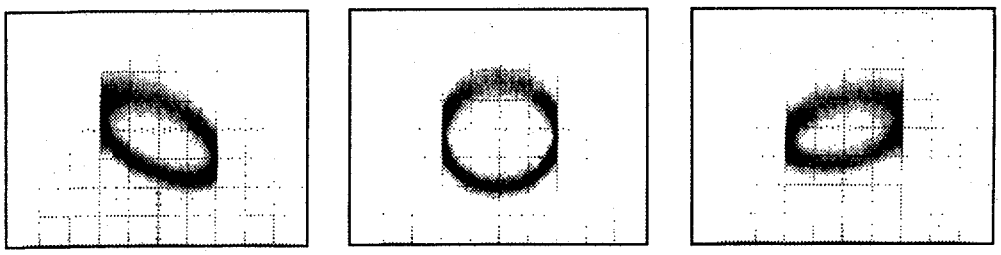


Figure 4

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

Mark	No.	Description	Part No.
NSP	44	Shaft	PLA1132
NSP	45	Main base	PNA2127
NSP	46	Rear angle	PNA2128
NSP	47	Select guide	PNB1497
	48	Angle L	PNB1480
	49	Side angle R	PNB1481
NSP	50	Screw holder	PNW2489
	51	Screw	BBZ30P080FZK
	52	Rack window 1	PAM1643
	53	Rack window 2	PAM1644
	54	Nylon rivet	RBM-003
	55	65 label (PD-P840F/KUC and PD-F51/KU/CA only)	ORW1069
	56	Washer	WT36D120D050
	57	Screw (PD-P840F/KUC, WEM, WB and RD)	BBZ30P080FNI
	57	Screw (PD-F51/KU/CA)	BBZ30P080FZK
	58	Screw	BBT30P080FCC
	59	Screw	IBZ30P050FZK
	60	Screw	IBZ30P060FCC
	61	Screw	BBZ26P060FCC
	62	Screw	IBZ30P080FCC
	63	Screw	IBZ30P150FCC
NSP	64	OUTPUT board assy (PD-F51/KU/CA only)	PWZ2708
NSP	65	I/O CONNECTOR assy (PD-F51/KU/CA only)	PWX1390
	66	Caution label HE (PD-P840F/WEM only)	PRW1233
	67	Caution label (PD-P840F/WEM only)	VRW1094
NSP	68	Caution label (F) (PD-P840F/WEM and WB only)	VRW-328
	69	Caution label (G) (PD-P840F/WEM and WB only)	VRW-329
	70	Address label	PRW1366
	71	Caution label (PD-P840F/WB only)	PRW1018

2. FRONT PANEL SECTION

Mark	No.	Description	Part No.
	1	DISPLAY board assy (PD-P840F/KUC, WEM, WB and RD)	PWZ2790
	1	DISPLAY board assy (PD-F51/KU/CA)	PWZ2789
NSP	2	ESCUTCHEON board assy	PWZ2792
	3	Power button G (PD-P840F/KUC, WEM, WB and RD)	PAC1776
	3	Power button B (PD-F51/KU/CA)	PAC1783
	4	Operate button G (PD-P840F/KUC, WEM, WB and RD)	PAC1777
	4	Operate button B (PD-F51/KU/CA)	PAC1799
	5	Mode button G (PD-P840F/KUC, WEM, WB and RD)	PAC1778
	5	Mode button B (PD-F51/KU/CA)	PAC1785
	6	Front window (PD-P840F/KUC, WEM, WB and RD)	PAM1639
	6	Front window R (PD-F51/KU/CA)	PAM1652
	7	Clear plate	PAM1640
	8	Tilt unit	PNB1498
	9	Door stay	PNB1499
	10	Door arm R	PNB1501
NSP	11	Door angle L	PNB1504
	12	Isolation sheet	PNM1236
	13	Blind felt	PNM1239
NSP	14	Protect tape	PNM1263
	15	Door panel G (PD-P840F/KUC, WEM, WB and RD)	PNW2449
	15	Door panel B (PD-F51/KU/CA)	PNW2473
	16	Escutcheon G (PD-P840F/KUC, WEM, WB and RD)	PNW2450
	16	Escutcheon B (PD-F51/KU/CA)	PNW2474
	17	Plate	PNW2451
	18	Lens	PNW2466
	19	Magnet latch	PXA1555
	20	Name plate (PD-P840F/KUC, WEM, WB and RD)	RAN1013
	20	Name plate (PD-F51/KU/CA)	PAN1035
	21	28P Flat flexible cable/30V	PDD1160
NSP	22	Caution label	PRW1361
	23	Caution label E1	PRW1392
	24	Screw	BBZ30P060FZK
	25	Screw	PPZ30P080FZK
	26	Screw	PPZ30P100FZK
	27	Screw	PPZ30P060FMC
	28	Washer	WT26D070D050

3. RACK BASE ASSY (50)

Mark	No.	Description	Part No.
NSP	1	RACK SWITCH board assy	PWZ2780
	2	2mm pitch connector assy 5P	PDE1236
	3	• • • • •	
	4	Lever spring	PBH1204
	5	Switch plate	PBK1131
NSP	6	Stopper pin	PLA1136
	7	Lock lever	PNW2409
	8	Rack base (50)	PNW2456
	9	Rack lock	PNW2528
	10	Screw	BPZ26P060FZK
	11	Screw	PBA1093
	12	Screw	PPZ30P060FMC
	13	Washer	WA32M010
	14	Conical spring	PBH1266
	15	Bush	PLA1137

4. SINGLE LOADING MECHANISM ASSY

Mark	No.	Description	Part No.
NSP	1	LED board A assy	PWZ2798
NSP	2	SLOT-IN MECHA board assy	PWZ2799
NSP	3	PHOTO board A assy	PWZ2800
NSP	4	PHOTO board B assy	PWZ2801
NSP	5	LED board B assy	PWZ2802
NSP	6	SLOT-IN MOTOR board assy	PWZ2803
	7	Side roller rubber	DEB1043
	8	Screw	PBA1093
	9	Screw	PBA1094
	10	Roller spring	PBH1175
	11	Shutter spring	PBH1190
	12	Centering spring	PBH1191
	13	Rubber belt	PEB1270
	14	Artificial leather 1	PED1014
	15	Artificial leather 2	PED1015
	16	Roller	PLM1005
	17	Shutter	PNB1473
	18	Slide plate	PNB1475
	19	Gear holder fixing plate	PNB1478
	20	Blind	PNM1252
	21	Case M	PNW2396
	22	Guide	PNW2477
	23	Centering guide	PNW2486
	24	Sliding spring	PBH1194
	25	Gear holder	PNB1474
	26	Supporter	PNB1507
	27	Motor pulley	PNW1634
	28	Case S	PNW2397
	29	Drive gear	PNW2398
	30	Joint gear	PNW2399
	31	Gear	PNW2400
	32	Gear pulley	PNW2401
	33	Roller holder	PNW2402
	34	Roller assy	PXA1541
	35	Rubber roller	PEB1266
	36	Roller shaft	PLA1129
	37	Motor assy	PEA1320
	38	Roller holder	PNW2402
NSP	39	Motor	PXM1002
	40	Screw	PMZ20P040FMC
	41	Screw	PPZ30P060FMC
	42	Washer	WT17D034D025
	43	Washer	WT21D050D025
	44	Washer	WT31D054D025
	45	Screw	IPZ30P080FMC

5. LOADING MECHANISM ASSY

Mark	No.	Description	Part No.
NSP	1	MECHA board assy (for loading)	PWZ2776
NSP	2	SENSOR board assy	PWZ2777
NSP	3	LOADING board assy	PWZ2778
	4	SELECT MOTOR board assy	PWZ2782
	5	LOADING MOTOR board assy	PWZ2783
	6	Connector assy (3P)	PDE1234
	7	Connector assy (4P)	PDE1235
	8	Screw	PBA1090
	9	Stopper spring	PBH1183
	10	Arm spring	PBH1202
	11	Timing belt	PEB1268
	12	Belt	PEB1269
	13	Lever rubber	PEB1273
	14	Cushion (art. suede)	PED-049
	15	Guide cushion (art. suede)	PED1016
NSP	16	Synchronized shaft	PLA1131
	17	Collar	PLA1133
NSP	18	Loading base	PNB1528
NSP	19	Lever	PNB1486
NSP	20	Slide angle	PNB1489
NSP	21	K lever	PNB1508
NSP	22	Drive lever	PNB1509
	23	Roller	PNW2299
	24	Sub gear	PNW2425
	25	Arm A	PNW2535
	26	Arm B	PNW2526
	27	Pulley	PNW2416
	28	Select lever	PNW2417
	29	Drive plate	PNW2418
	30	Clamper	PNW2419
NSP	31	Tensioner	PNW2423
	32	Joint rack	PNW2424
	33	Synchronized gear	PNW2413
	34	A cup	PNW2536
	35	B cup	PNW2427
	36	D cup	PNW2429
	37	Stopper	PNW2431
	38	Clamper base	PNW2432
	39	Bushing	PNW2435
	40	Disc guide	PNW2500
	41	Roller shaft	DLA1520
	42	Stocker roller	DNK2391
	43	Search spring	PBH1201
	44	Belt A	PEB1244
	45	Cord clamper	RNH-184
	46	Side angle	PNB1484
	47	Gear angle	PNB1485
	48	Slide link	PNB1490
	49	P lever A	PNB1491
	50	P lever B	PNB1492
	51	Gear angle B	PNB1496
	52	Slider	PNB1510
	53	Guard plate	PNM1240
	54	Roller	PNW1967
	55	Gear pulley	PNW2411
	56	Gear L	PNW2412
	57	Washer	WT12D032D025
	58	Gear A	PNW2420
	59	Worm wheel	PNW2421
	60	Worm	PNW2422
	61	C cup	PNW2537
	62	Search lever	PNW2430
	63	Gear S	PNW2433
	64	Synchronized gear S	PNW2434
	65	C pulley	PNW2460
	66	Motor assy	PEA1320
	67	Motor pulley	PNW1634
NSP	68	Motor	PXM1002
	69	Float screw	PBA1084
	70	Float screw S	PBA1087
	71	Float spring	PBH1197
	72	Float spring B	PBH1198
	73	Connector assy (4P)	PDE1146
	74	Float rubber	PEB1267
	75	Rubber bushing	VEB1138
	76	Screw	BBZ26P060FZK
	77	Screw	BBZ30P050FZK
	78	Screw	BPZ30P080FMC
	79	Screw	BPZ30P060FZK
	80	Screw	IBZ30P080FMC
	81	Screw	PMZ20P030FMC
	82	Washer	WA31D054D013
	83	Washer	WT17D034D025
	84	Washer	WT21D050D025
	85	Washer	WT26D047D025
	86	Washer	WT26D047D050
	87	Washer	WT36D072D025
	88	E ring	YE25FUC
	89	E ring	YE30FUC
NSP	90	Servo mechanism assy B	PXA1539
NSP	91	MECHANISM board assy (for servo)	PWX1192
	92	Screw	JFZ20P040FMC
	93	Guide bar (steel)	PLA1094
	94	Screw	JFZ17P025FZK
NSP	95	Servo base	PNB1477
	96	Gear 1 (POM)	PNW2052
	97	Gear 2 (POM)	PNW2053
	98	Gear 3 (POM)	PNW2054
	99	Carriage base (FE)	PNW2445
	100	Pickup assy	PEA1319
	101	D.C. motor assy (spindle)	PEA1235
	102	D.C. motor assy (carriage)	PEA1246
	103	Pinion gear (POM)	PNW2055
NSP	104	D.C. motor	PXM1027
	105	Disc table assy	PEA1314
	106	Screw	BPZ26P100FNC
	107	Clamp magnet	PMF1014

Mark	No.	Description	Part No.
	108	Sheet (L)	PED1024
	109	Sheet (M)	PED1025
	110	Sheet (S)	PED1022
	111	Stopper plate	PNM1255
	112	Lever spacer	PNM1256
	113	Angle spacer	PNM1257
	114	S spacer	PNM1260
	115	DG spacer	PNM1261
NSP	116	Spacer (DK)	REC1056

6. PACKING

Mark	No.	Description	Part No.
	1	Cord with plug (PD-F51/KU/CA only)	PDE1001
	2	Cord with mini plug (PD-F51/KU/CA only)	PDE1247
	3	Jacket file	PHN1047
	4	Operating instructions (English/French)(PD-F51/KU/CA only)	PRB1219
	5	Remote control unit (PD-F51/KU/CA only)	PWW1091
	6	Battery cover (PD-F51/KU/CA only)	PZN1010
NSP	7	Battery (R03, AAA) (PD-F51/KU/CA only)	VEM-022
	8	Transportation screw A	PBA1088
	9	Transportation screw B	PBA1089
	10	Protector F	PHA1280
	11	Protector R	PHA1281
	12	Sheet	PHC1081
	13	CD packing case 51U (PD-F51/KU/CA)	PHG2077
	13	CD packing case (PD-P840F/KUC)	PHG2064
	13	CD packing case 84E (PD-P840F/WEM, WB and RD)	PHG2078
	14	Transportation screw caution label	PRM1033
	15	+1 caution label	PRM1035
	16	Polyethylene bag	Z21-038
	17	Mirror mat sheet	Z23-020
	18	Caution label (PD-P840F/KUC only)	PRM1038
	19	Cloth assy	PXA1566

8. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/8PM 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
		LIST OF ASSEMBLIES	
		MOTHER BOARD ASSY (PD-P840F/KUC, WEM, WB AND RD)	PWM1884
		MOTHER BOARD ASSY (PD-F51/KU/CA)	PWM1883
		├─ MAIN BOARD ASSY (PD-P840F/KUC, WEM, WB AND RD)	PWZ2697
		├─ MAIN BOARD ASSY (PD-F51/KU/CA)	PWZ2696
NSP		├─ BUS BOARD ASSY (PD-P840F/KUC, WEM, WB AND RD ONLY)	PWZ2712
NSP		└─ OUTPUT BOARD ASSY (PD-F51/KU/CA ONLY)	PWZ2708
NSP		SUB BOARD ASSY (PD-P840F/KUC)	PWX1343
NSP		SUB BOARD ASSY (PD-P840F/WEM AND WB)	PWX1345
NSP		SUB BOARD ASSY (PD-P840F/RD)	PWX1344
NSP		SUB BOARD ASSY (PD-F51/KU/CA)	PWX1342
		├─ POWER BOARD ASSY (PD-P840F/KUC AND PD-F51/KU/CA)	PWZ2784
		├─ POWER BOARD ASSY (PD-P840F/WEM AND WB)	PWZ2786
		├─ POWER BOARD ASSY (PD-P840F/RD)	PWZ2785
		├─ DISPLAY BOARD ASSY (PD-P840F/KUC, WEM, WB AND RD)	PWZ2790
		├─ DISPLAY BOARD ASSY (PD-F51/KU/CA)	PWZ2789
NSP		├─ ESCUTCHEON BOARD ASSY	PWZ2792
NSP		└─ JOINT BOARD ASSY	PWZ2795
NSP		I/O CONNECTOR ASSY (PD-F51/KU/CA ONLY)	PWX1390
NSP		RACK BASE ASSY(50)	PXA1551
NSP		└─ RACK BOARD ASSY(50)	PWX1341
NSP		└─ RACK SWITCH BOARD ASSY	PWZ2780

Mark	No.	Description	Part No.
NSP		LOADING MECHANISM ASSY	PXA1535
NSP		├─ LOADING MECHANISM BOARD ASSY	PWX1339
NSP		├─ MECHA BOARD ASSY(FOR LOADING)	PWZ2776
NSP		├─ SENSOR BOARD ASSY	PWZ2777
NSP		├─ LOADING BOARD ASSY	PWZ2778
		├─ SELECT MOTOR BOARD ASSY	PWZ2782
		└─ LOADING MOTOR BOARD ASSY	PWZ2783
NSP		└─ SERVO MECHANISM ASSY B	PXA1539
NSP		└─ MECHANISM BOARD ASSY (FOR SERVO)	PWX1192
NSP		SINGLE LOADING MECHANISM ASSY	PXA1540
		└─ SLOT-IN MECHA BOARD ASSY	PWX1352
NSP		├─ LED BOARD A ASSY	PWZ2798
NSP		├─ SLOT-IN MECHA BOARD ASSY	PWZ2799
NSP		├─ PHOTO BOARD A ASSY	PWZ2800
NSP		├─ PHOTO BOARD B ASSY	PWZ2801
NSP		├─ LED BOARD B ASSY	PWZ2802
NSP		└─ SLOT-IN MOTOR BOARD ASSY	PWZ2803

MAIN BOARD ASSY

SEMICONDUCTORS

	IC151	CXA1372Q
	IC301	CXD2500BQ
⚠	IC203	LA6517
⚠	IC201, IC202	LA6520
	IC405	NJM4558M
	IC401	PD2026B(L)
	IC351 (PD-P840F/KUC, WEM, WB AND RD)	PD3281A
	IC351(PD-F51/KU/CA)	PD3280B
	Q403, Q404	2SD2114K
	Q391(PD-F51/KU/CA ONLY)	2SC2412K
	Q322, Q405	DTC124EK
	D391-D397(PD-F51/KU/CA ONLY)	1SS133X

SWITCH

	S301	PSG1006

Mark	No.	Description	Part No.
COIL			
	L351		LFA820K
CAPACITORS			
	C435-C438		CCSQCH050C50
	C354		CCSQCH101J50
	C393(PD-F51/KU/CA ONLY)		CCSQCH101J50
	C403		CCSQCH120J50
	C404		CCSQCH220J50
	C429, C430		CCSQCH390J50
	C152, C153		CEJA101M10
	C433, C434		CEJA220M25
	C206-C209, C301, C302, C401		CEJA330M16
	C431, C432, C71-C74		CEJA330M16
	C351		CEJA331M6R3
	C160, C162		CEJA4R7M50
	C309		CEJAR47M50
	C413, C415, C416, C421		CFTYA104J50
	C154		CKCYF103Z50
	C157, C164, C167, C169, C205		CKSQYB103K50
	C210, C215, C218, C219, C225		CKSQYB103K50
	C230, C240, C308		CKSQYB103K50
	C158, C159, C161, C163, C303		CKSQYB104K25
	C306		CKSQYB152K50
	C155		CKSQYB182K50
	C170		CKSQYB332K50
	C156, C168		CKSQYB333K25
	C171, C172		CKSQYB472K50
	C307		CKSQYB473K25
	C352, C353, C355, C361, C367		CKSQYF103Z50
	C461		CKSQYF103Z50
	C304, C305, C406, C410, C414		CKSQYF104Z25
	C423, C424, C75-C79		CKSQYF104Z25
	C417		CKSQYF474Z16
RESISTORS			
	VR151, VR152 (22kΩ)		RCP1084
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN203	MT CONNECTOR 5P	173981-5
	CN202	22P FFC CONNECTOR	52044-2245
	CN401	4P JUMPER CONNECTOR (PD-P840F/KUC, WEM, WB AND RD ONLY)	52147-0410
	CN204	6P JUMPER CONNECTOR	52147-0610
	CN352	7P JUMPER CONNECTOR	52147-0710
	CN353	7P JUMPER CONNECTOR (PD-P840F/KUC, WEM, WB AND RD)	52147-0710
	CN353	9P JUMPER CONNECTOR(PD-F51)	52147-0910
	CN11	12P JUMPER CONNECTOR	52147-1210
	CN351	34P FFC CONNECTOR	9604S-34C
	X401	CRYSTAL RESONATOR(16.9344MHz)	PSS1008
	CN201	6P SIDE POST	VKN-004
	X351	CERAMIC RESONATOR(8MHz)	VSS1031

Mark	No.	Description	Part No.
BUS BOARD ASSY (PD-P840F/KUC, WEM, WB AND RD ONLY)			
SEMICONDUCTORS			
	Q901, Q902		DTC124EK
	D901-D903		1SS133X
CAPACITORS			
	C904-C906		CCSQCH820J50
	C901, C902		CFTXA152J50
	C907		CKSQYF103Z50
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	CN901	15P SOCKET	AKP1090
OUTPUT BOARD ASSY (PD-F51/KU/CA ONLY)			
COILS			
	L391, L395, L396		LFA010K
CAPACITORS			
	C397, C399		CCCCH470J50
	C441, C442		CFTXA152J50
	C398		CGCYX104K25
	C388, C389		CKSQYB104K25
OTHERS			
	JA401	2P PIN JACK	PKB1009
	JA393	MINI JACK	PKN1005
	JA391, JA392	REMOTE CONTROL JACK	RKN1004
POWER BOARD ASSY			
SEMICONDUCTORS			
⚠	IC31, IC32 (PD-P840F/WEM, WB AND RD ONLY)		ICP-N10
⚠	IC22		NJM79L05A
⚠	IC21		PQ05RR12
⚠	D11-D14, D52		11ES2
	D54		MTZJ18B
SWITCH			
⚠	S5(PD-P840F/RD ONLY)		PSB1006
CAPACITORS			
	C28		CEAS101M10
	C52		CEAS101M35
	C27		CEAS102M6R3
	C26		CEAS332M16
	C25		CEAS472M16
	C11, C13, C15-C17		CKCYF103Z50
RESISTORS			
	All Resistors		RD1/6PM□□□J
OTHERS			
⚠	TERMINAL		RKC-061

Mark	No.	Description	Part No.

DISPLAY BOARD ASSY

SEMICONDUCTORS

	D701-D704	1SS254

SWITCHES

	S701, S703, S704, S708-S714	PSG1006
	S716	PSG1006

RESISTORS

	All Resistors	RD1/6PM□□□J

OTHERS

	CN701 28P FFC CONNECTOR	9604S-28F
	V701 FL TUBE	PEL1079
	REMOTE RECEIVER UNIT (PD-F51/KU/CA ONLY)	SBX1785-51

I/O CONNECTOR ASSY (PD-F51/KU/CA ONLY)

SEMICONDUCTORS

	D1301-D1314	1SS254

CAPACITORS

	C1301-C1305	CKPUYB101K50
	C1306-C1308	CKPUYF103Z25

RESISTORS

	R1301-R1307	RD1/6PM471J

OTHERS

	JA394 SOCKET	PKP-038

ESCUTCHEON BOARD ASSY

SEMICONDUCTORS

	D803	1SS254
	D801, D802	PCX1019

SWITCHES

	S801, S802	PSG1006

RESISTORS

	All Resistors	RD1/6PM□□□J

OTHERS

	J802 2mm PITCH CONNECTOR ASSY 2P	PDE1251

JOINT BOARD ASSY

OTHERS

	CN752 28P FFC CONNECTOR	9604S-28F
	CN751 34P FFC CONNECTOR	9604S-34F

Mark	No.	Description	Part No.

RACK SWITCH BOARD ASSY

SWITCHES

	S651, S652	DSG1015

OTHERS

	CN651 AMP CONNECTOR(5P)	VKN1062

MECHA BOARD ASSY(FOR LOADING)

OTHERS

	CN621 FPC CONNECTOR 12P	12FMZ-ABT
	CN622 AMP CONNECTOR 3P	4-173979-3
	CN624 AMP CONNECTOR 3P	6-173979-3
	CN626 AMP CONNECTOR 4P	6-173979-4
	CN625 22P FFC CONNECTOR	SLEM22R-2
	CN623 MT CONNECTOR 4P	173979-4
	CN627 MT CONNECTOR 3P	173979-3

SENSOR BOARD ASSY

SEMICONDUCTOR

	Q631	GP1A53HR

SWITCH

	S631	DSG1016

RESISTORS

	All Resistors	RD1/6PM□□□J

OTHERS

	CN631 AMP CONNECTOR 4P	6-173979-4

LOADING BOARD ASSY

SWITCH

	LEAF SWITCH	VSK1011

OTHERS

	CN641 AMP CONNECTOR 3P	4-173979-3

SELECT MOTOR BOARD ASSY

OTHERS

	J627 2mm PITCH CONNECTOR ASSY 2P	PDE1244

LOADING MOTOR BOARD ASSY

OTHERS

	J624 2mm PITCH CONNECTOR ASSY 2P	PDE1245

Mark	No.	Description	Part No.

MECHANISM BOARD ASSY(FOR SERVO)

SWITCH

	S610		DSG1016

OTHERS

	CN610	MT CONNECTOR 4P	173979-4

LED BOARD A ASSY

SEMICONDUCTORS

	D661-D665		GL460I1

RESISTORS

	R664, R665	(130Ω)	PCN1036

SLOT-IN MECHA BOARD ASSY

SEMICONDUCTORS

	Q667-Q670		DTC124ES

RESISTORS

	R667-R670, R672	(33kΩ)	PCN1034

OTHERS

	CN661	6P JUMPER CONNECTOR	52147-0610
	CN664	3P JUMPER CONNECTOR	52151-0310
	CN663	4P JUMPER CONNECTOR	52151-0410
	CN665	7P JUMPER CONNECTOR	52151-0710

PHOTO BOARD A ASSY

SEMICONDUCTORS

	Q661-Q665		PT460I1

RESISTOR

	R671	(33kΩ)	PCN1034

PHOTO BOARD B ASSY

SEMICONDUCTOR

	Q666		PT460I1

RESISTOR

	R673	(33kΩ)	PCN1034

Mark	No.	Description	Part No.

LED BOARD B ASSY

SEMICONDUCTOR

	D666		GL460I1

RESISTOR

	R666	(130Ω)	PCN1036

OTHERS

	J664	2mm PITCH JUMPER 3P	D20PWY0320E

SLOT-IN MOTOR BOARD ASSY

No service part

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The Art of Entertainment

Service Manual

ORDER NO.
RRZ1122

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

FILE TYPE CD PLAYER

PD-P840F

PD-F51

CHAPTER 2

CONTENTS

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2. SCHEMATIC AND PCB CONNECTION DIAGRAMS ····· 2-13
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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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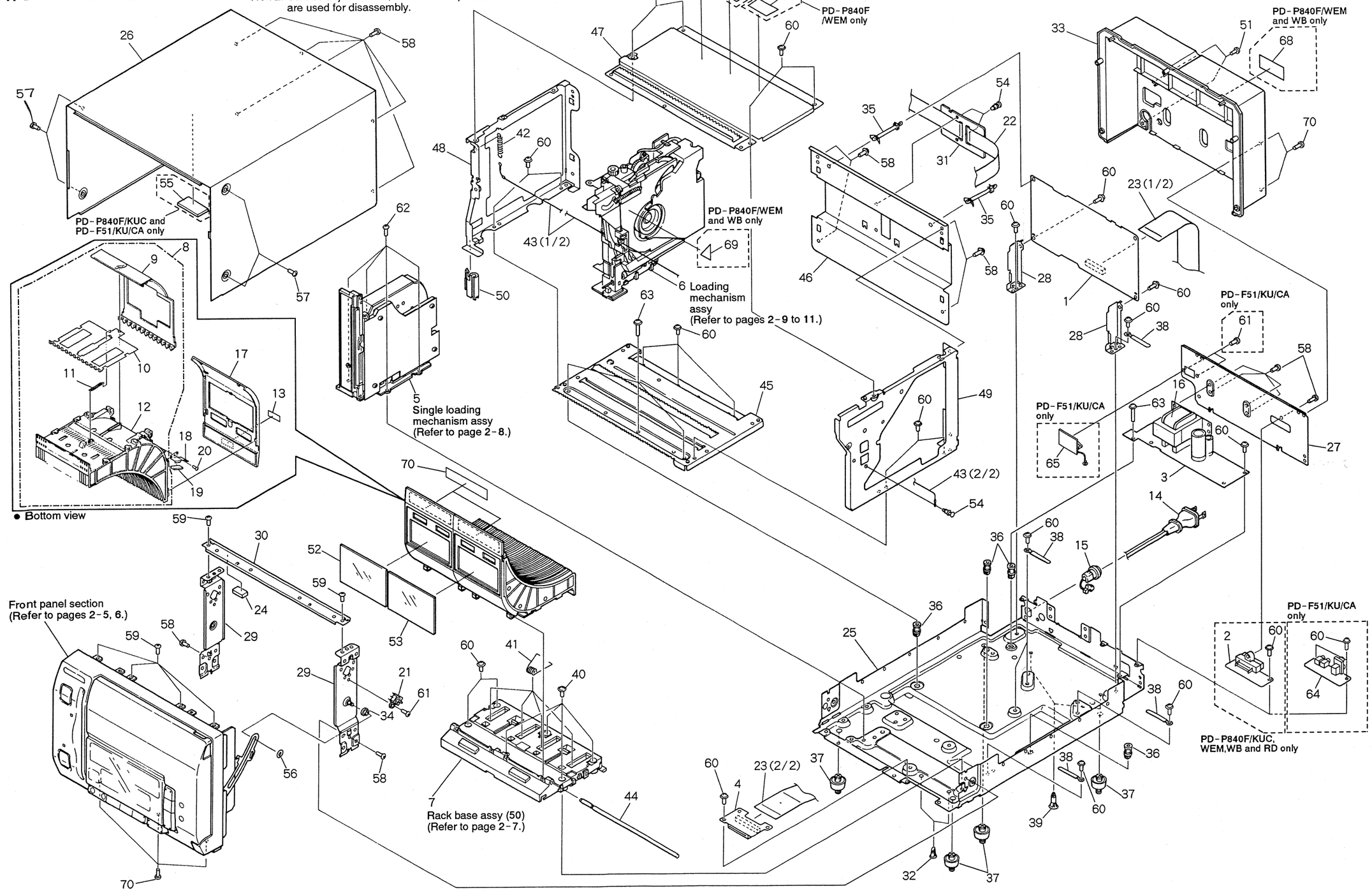
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

T-IFI MAY 1994 Printed in Japan

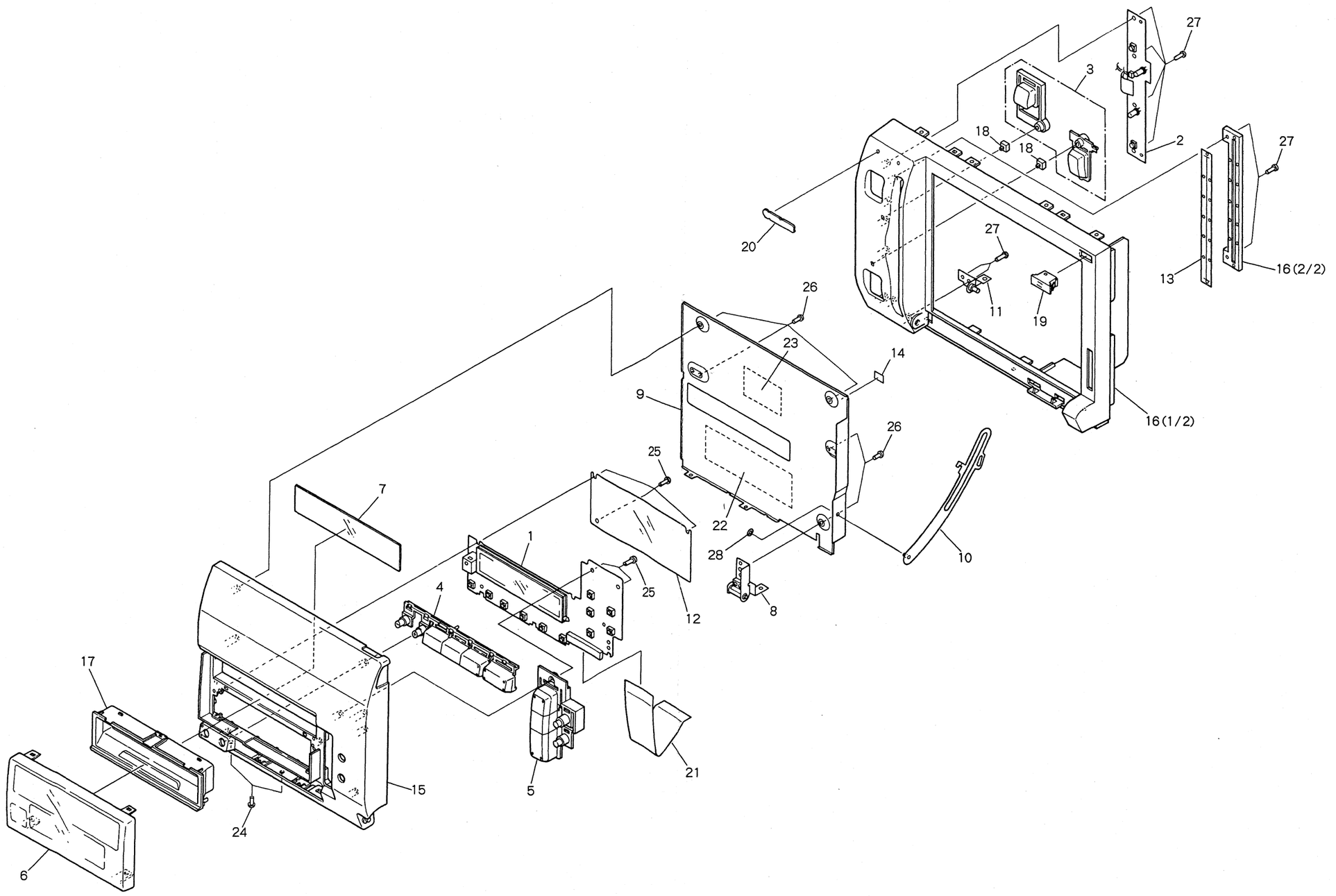
1. EXPLODED VIEWS AND PACKING

1. EXTERIOR SECTION

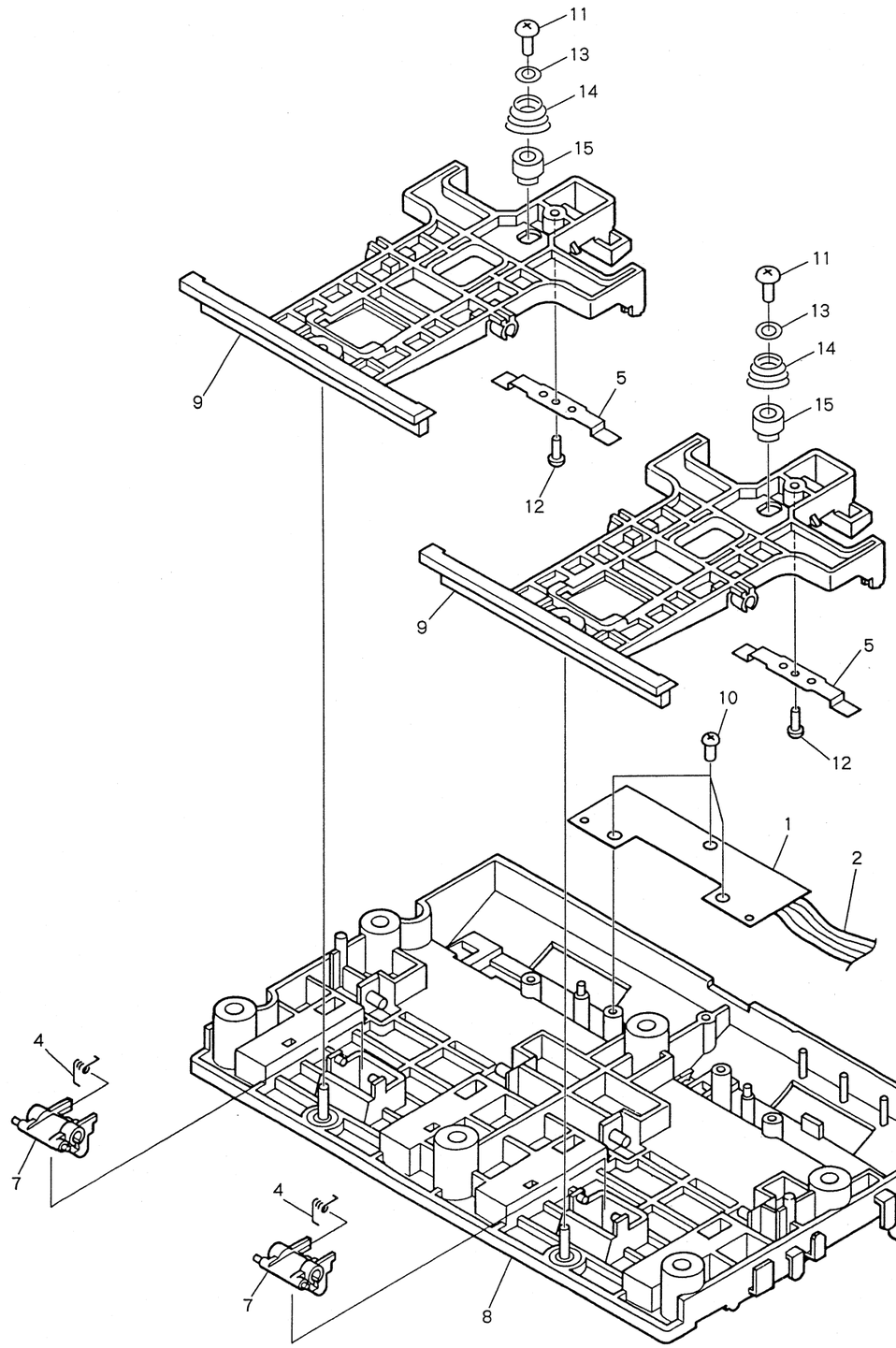
NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.



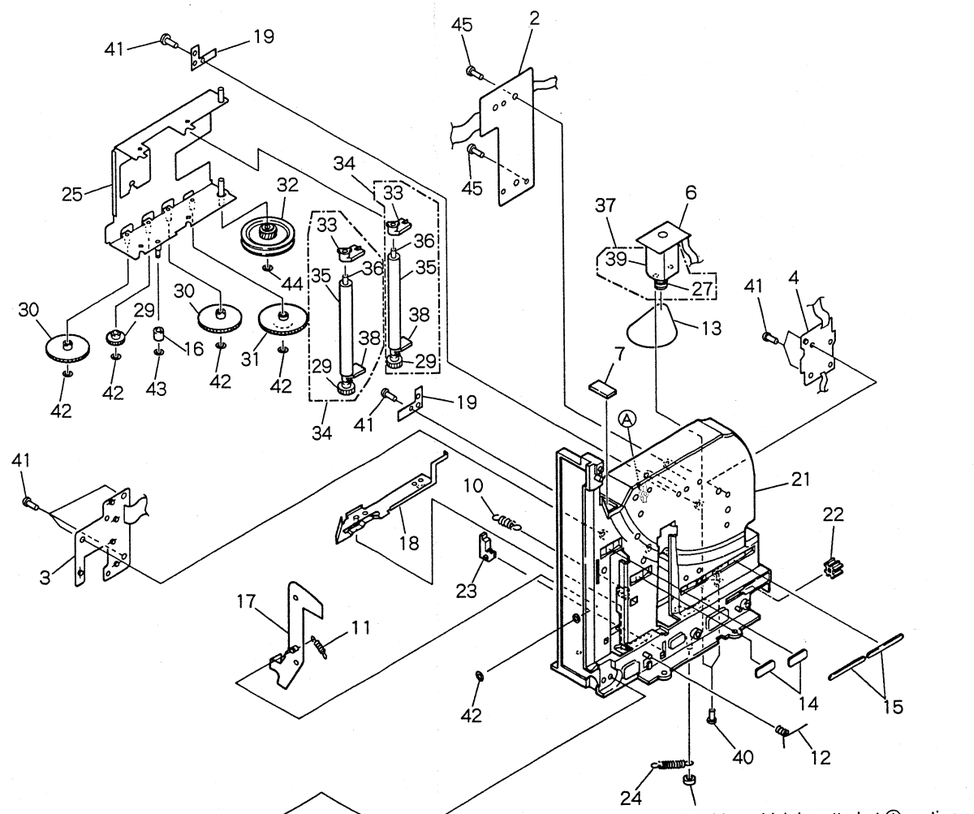
2. FRONT PANEL SECTION



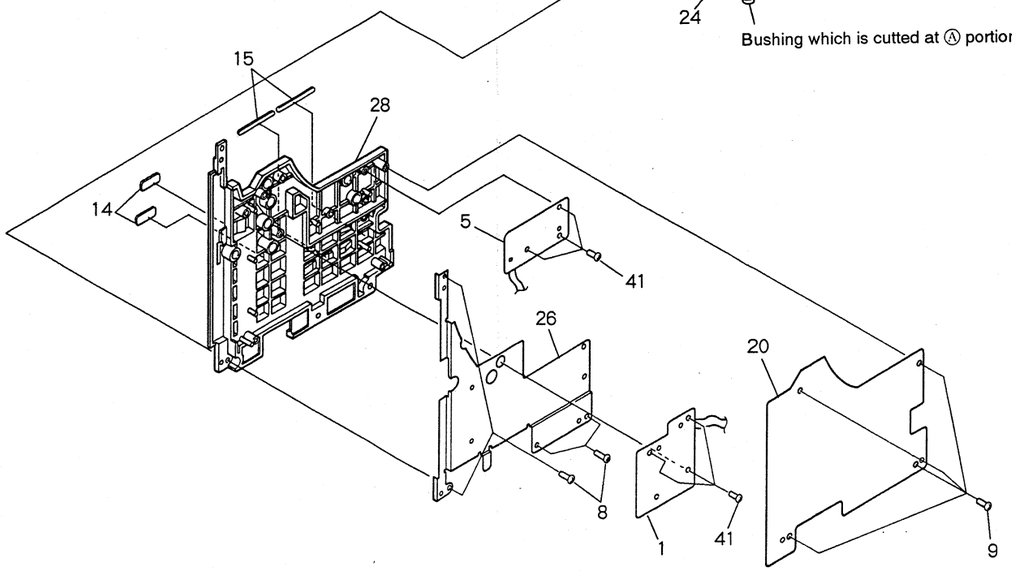
3. RACK BASE ASSY (50)



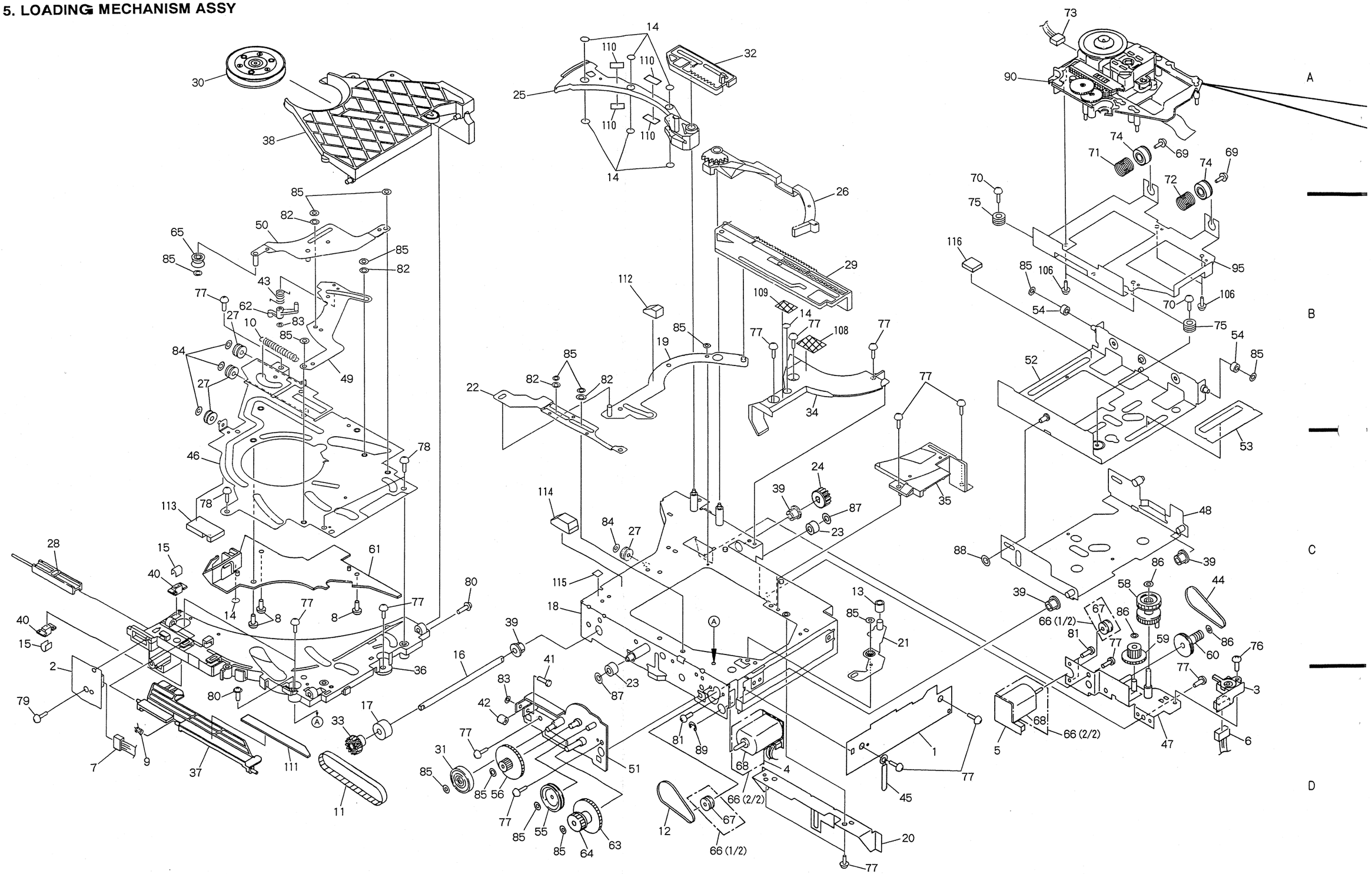
4. SINGLE LOADING MECHANISM ASSY

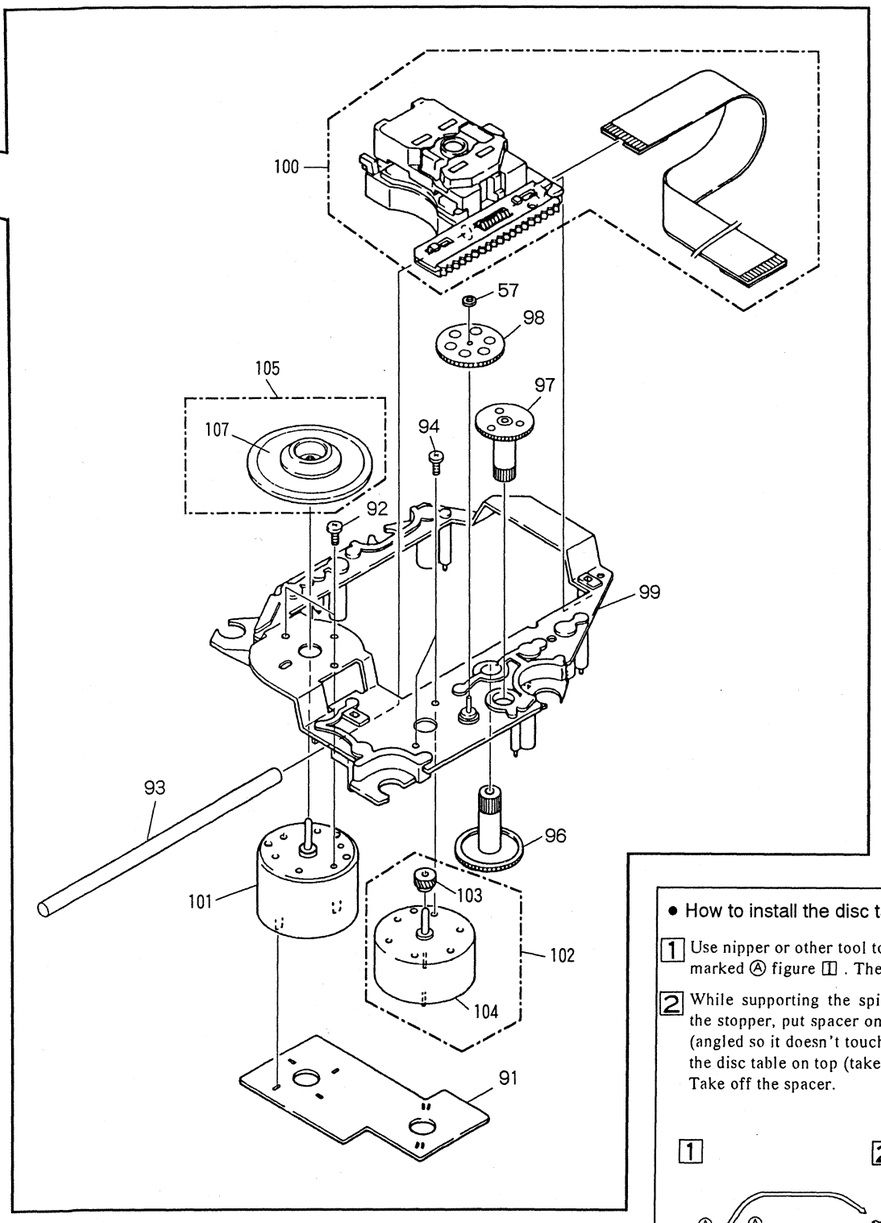


Bushing which is cutted at Ⓐ portion.



5. LOADING MECHANISM ASSY

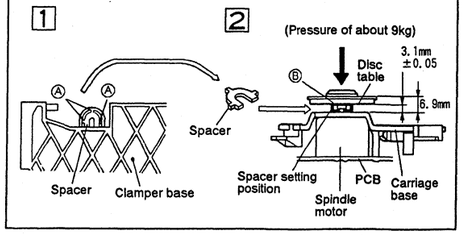




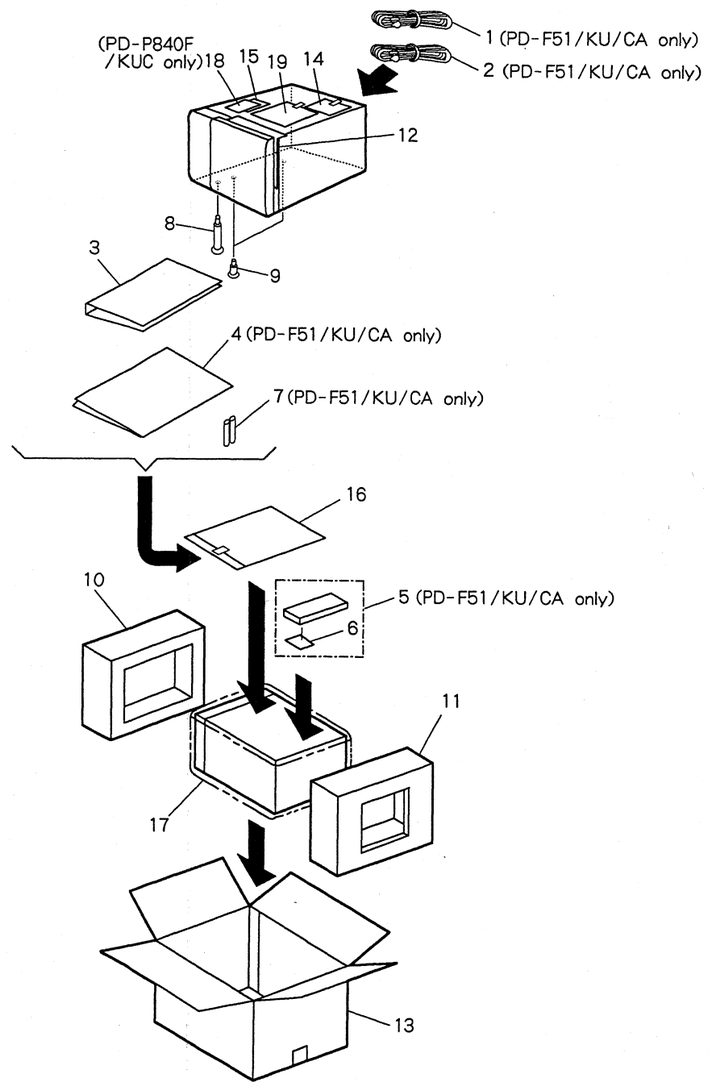
- How to install the disc table

1 Use nipper or other tool to cut the three sections marked Ⓐ figure 1 . Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section Ⓑ), and stick the disc table on top (takes about 9kg pressure). Take off the spacer.



6. PACKING

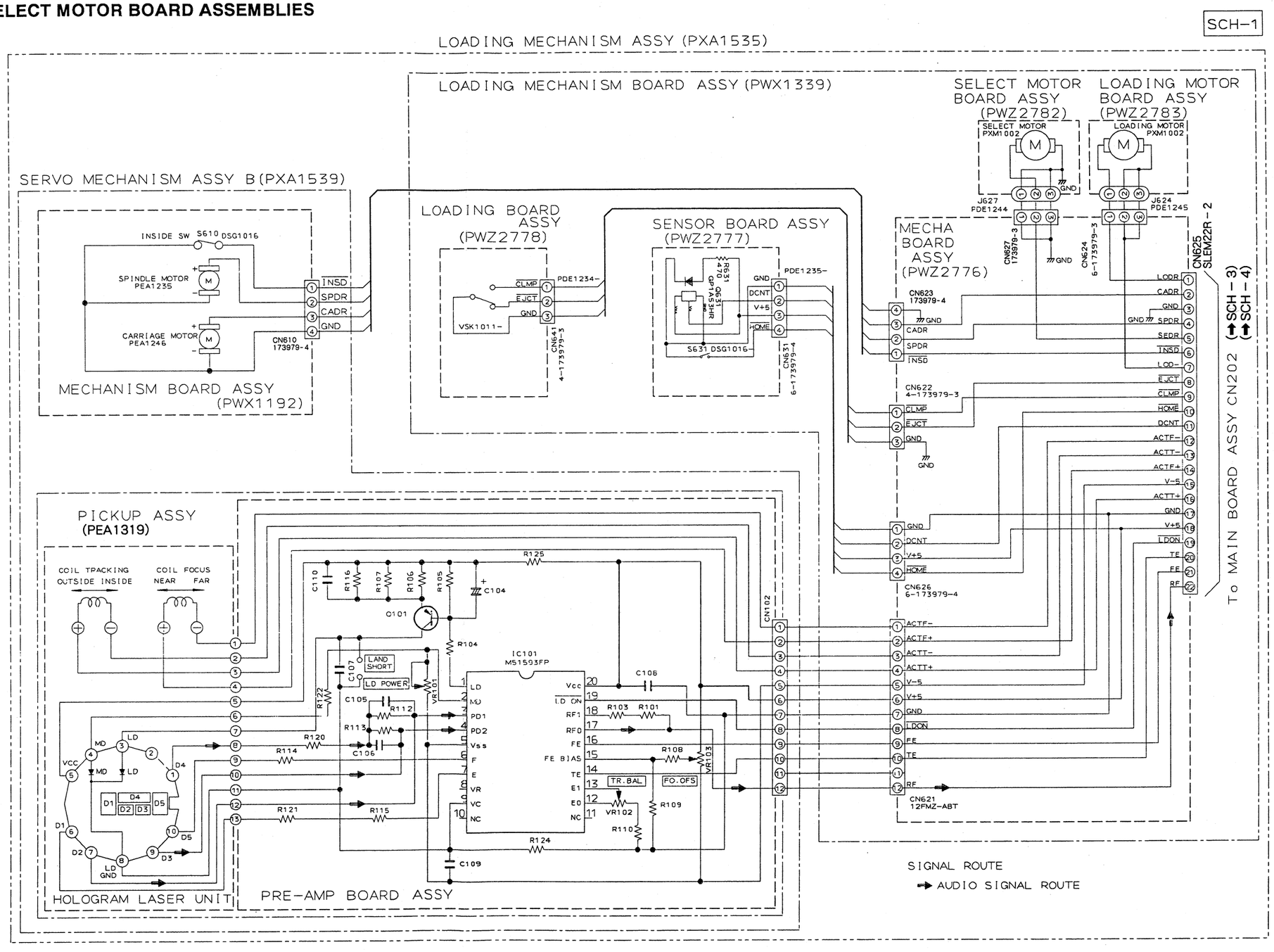


2. SCHEMATIC AND PCB CONNECTION DIAGRAMS

1. MECH BOARD, LOADING MOTOR BOARD, LOADING BOARD, MECHANISM BOARD, PICKUP, SENSOR BOARD AND SELECT MOTOR BOARD ASSEMBLIES

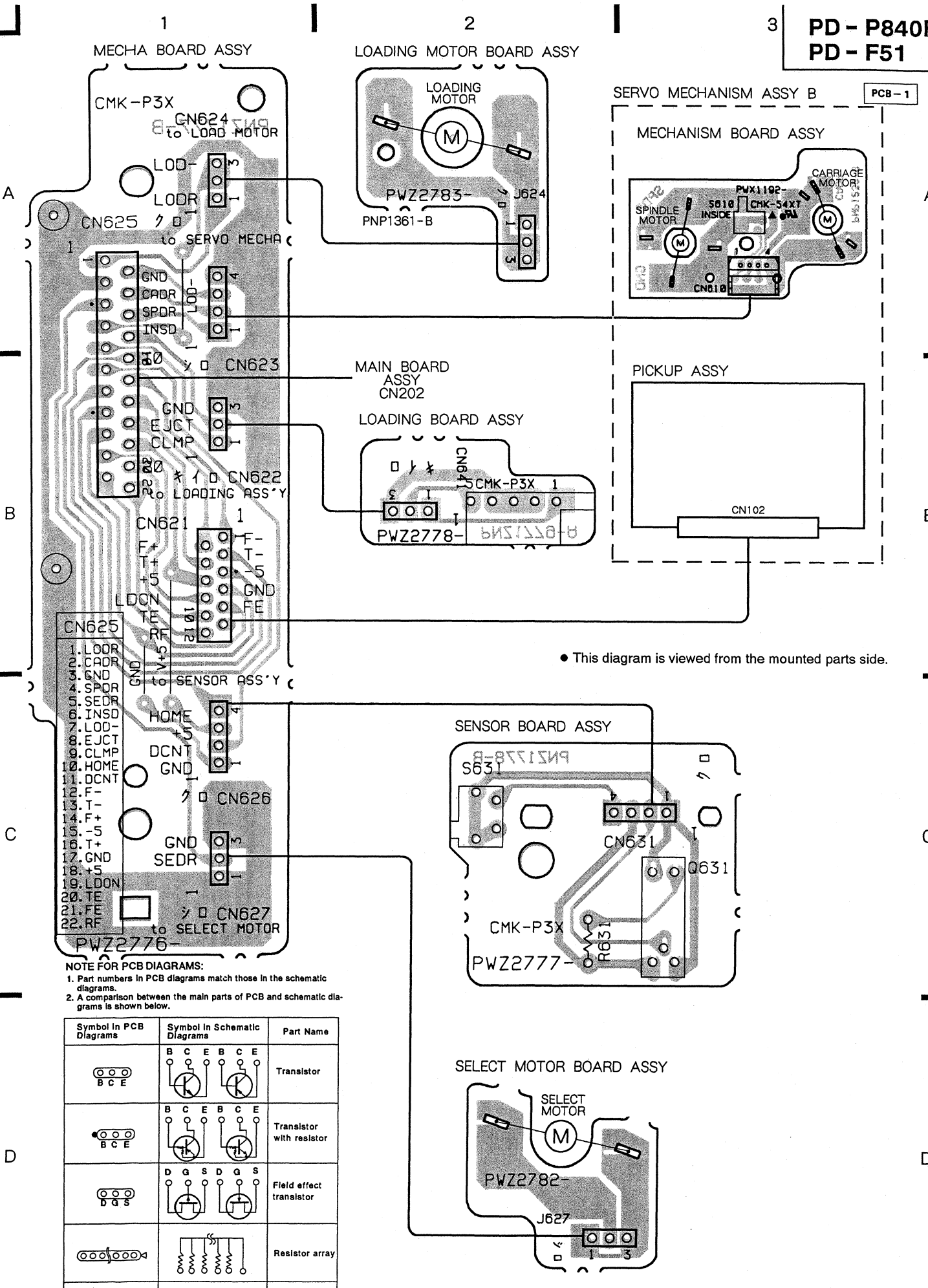
NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance:(F):±1%, (G):±2%, (K):±10%, (M):±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit : p:pF or μF unless otherwise noted.
   Ratings : capacitor (μF) / voltage (V) unless otherwise noted.
   Rated voltage : 50V except for electrolytic capacitors.
5. **COILS:**
   Unit : m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or ←V :
   DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦mA or ←mA :
   DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ●⊘ or ⊘● : Adjusting point.
   - ● ◀ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH – □ ON THE SCHEMATIC DIAGRAM:**
   - SCH–□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):
   OUT OF PCB ASSY
   LEVER SWITCH : DOOR SW
   MAIN BOARD ASSY
   S301 : TEST MODE
   POWER BOARD ASSY
   VOLTAGE SELECTOR : AC110-127V/220V-240V
   (PD-P840F/RD type only)
   DISPLAY BOARD ASSY
   S701 : RANDOM
   S703 : ⏮◀◀ (TRACK/MANUAL SEARCH REV)
   S704 : ▶/⏸ (PLAY/PAUSE)
   S708 : DISC NUMBER (+)
   S709 : MODE
   S710 : CLEAR
   S711 : ▶▶⏭ (TRACK/MANUAL SEARCH FWD)
   S712 : □ (STOP)
   S713 : ADLC
   S716 : DISC NUMBER (–)
   ESCUTCHEON BOARD ASSY
   S801 : ⏏ (EJECT)
   S802 : POWER STANDBY/ON – STANDBY
   RACK SWITCH BOARD ASSY
   S651 : EJECT (RACK 1)
   S652 : EJECT (RACK 2)
   SENSOR BOARD ASSY
   S631 : HOME
   LOADING BOARD ASSY
   LEAF SWITCH : EJECT/CLAMP
   MECHANISM BOARD ASSY (For SERVO)
   S610 : INSIDE SW



SCH-1 MECHA BOARD ASSY, LOADING MOTOR BOARD ASSY, LOADING BOARD ASSY, MECHANISM BOARD ASSY, PICKUP ASSY, SENSOR BOARD ASSY, SELECT MOTOR BOARD ASSY

SCH-1 MECHA BOARD ASSY, LOADING MOTOR BOARD ASSY, LOADING BOARD ASSY, MECHANISM BOARD ASSY, PICKUP ASSY, SENSOR BOARD ASSY, SELECT MOTOR BOARD ASSY

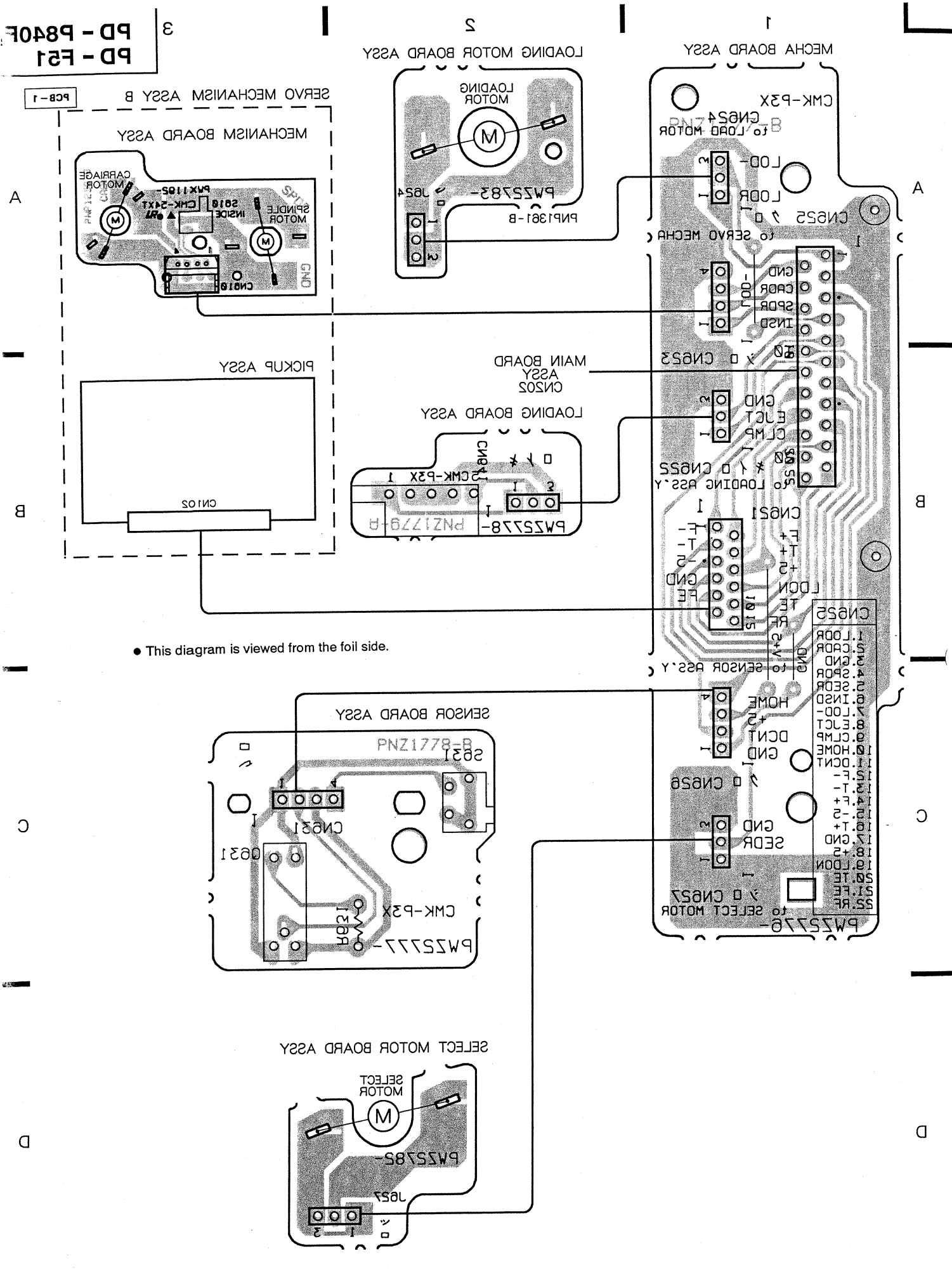


● This diagram is viewed from the mounted parts side.

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator



● This diagram is viewed from the foil side.

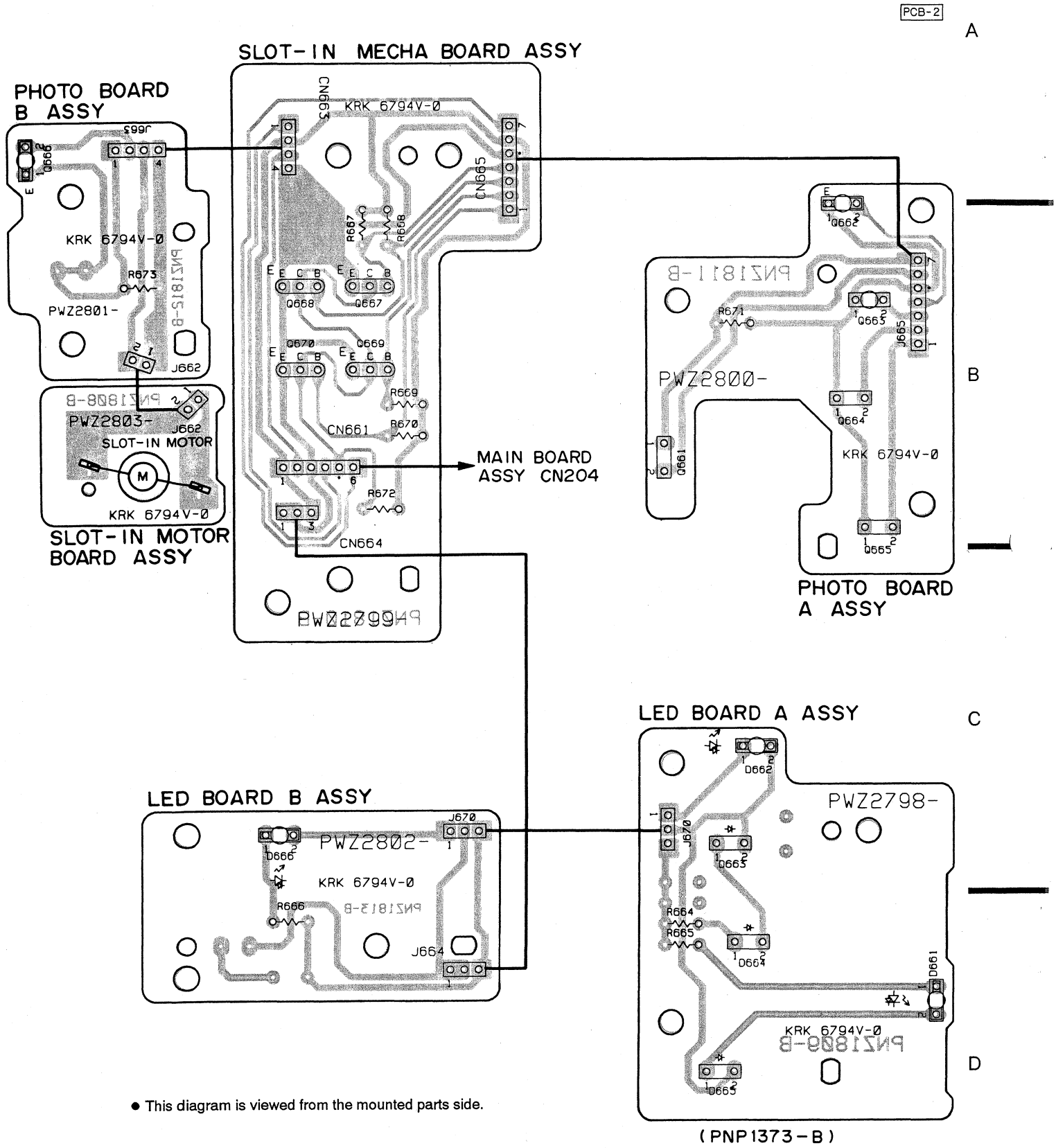
2. LED BOARD A, SLOT-IN MECHA BOARD, PHOTO BOARD A, PHOTO BOARD B, LED BOARD B AND SLOT-IN MOTOR BOARD ASSEMBLIES

PCB-2

(PNP1373-B)

● This diagram is viewed from the foil side.

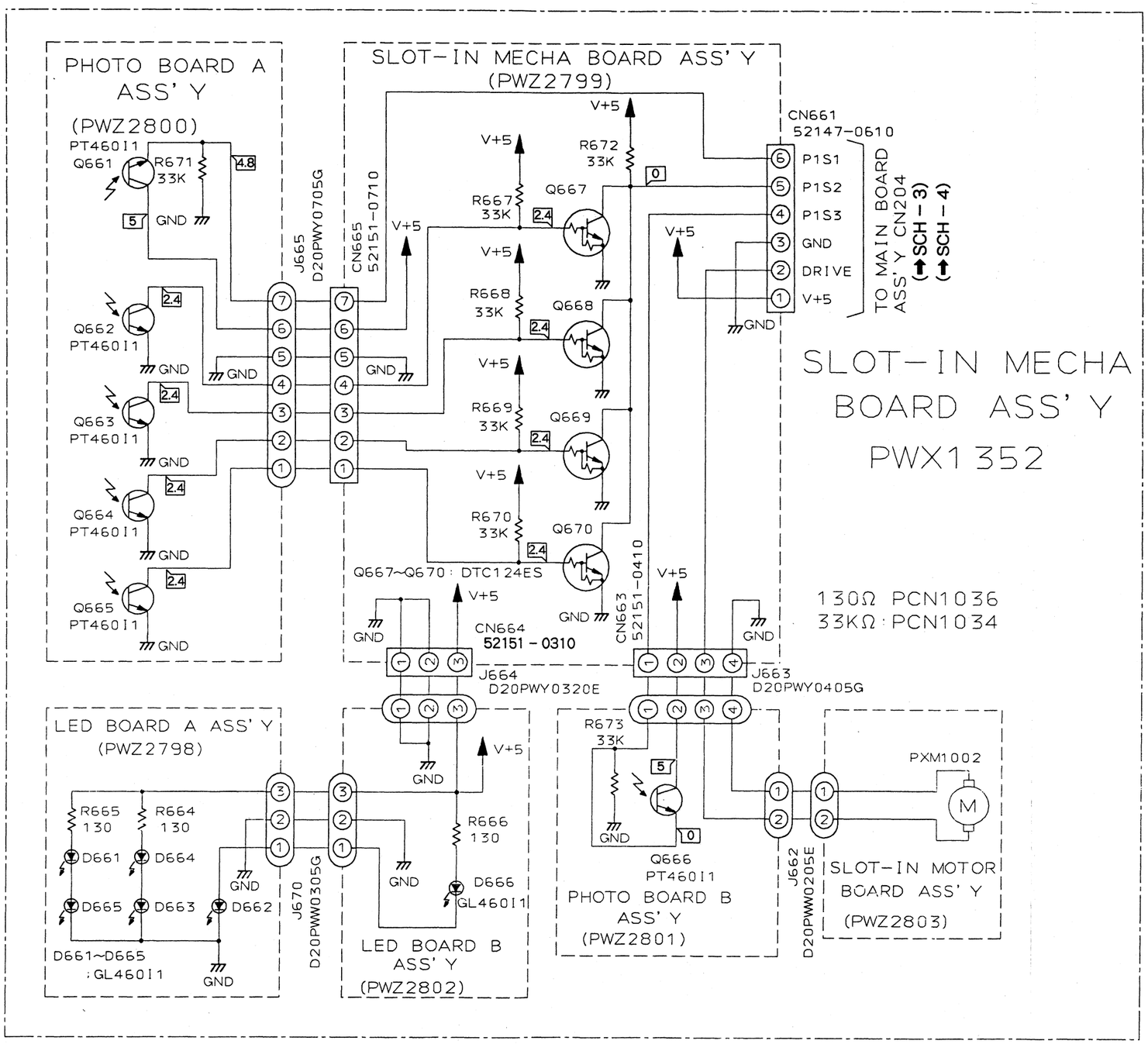
2. LED BOARD A, SLOT-IN MECHA BOARD, PHOTO BOARD A, PHOTO BOARD B, LED BOARD B AND SLOT-IN MOTOR BOARD ASSEMBLIES



● This diagram is viewed from the mounted parts side.

(PNP1373-B)

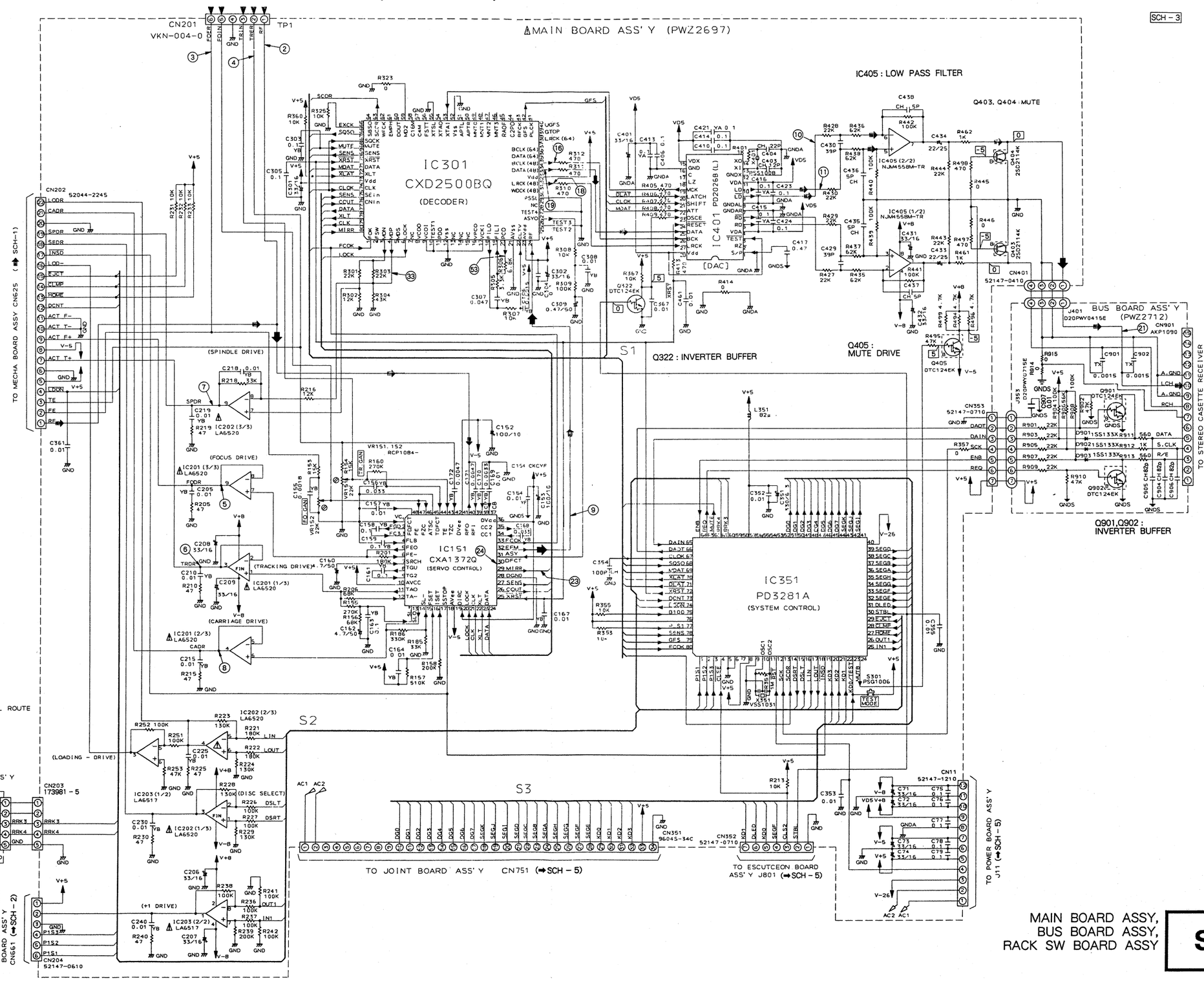
SCH-2



SCH-2 LED BOARD A ASSY, SLOT-IN MECHA BOARD ASSY, PHOTO BOARD A ASSY, PHOTO BOARD B ASSY, LED BOARD B ASSY, SLOT-IN MOTOR BOARD ASSY

LED BOARD A ASSY, SLOT-IN MECHA BOARD ASSY, PHOTO BOARD A ASSY, PHOTO BOARD B ASSY, LED BOARD B ASSY, SLOT-IN MOTOR BOARD ASSY SCH-2

3. MAIN BOARD, BUS BOARD AND RACK SW BOARD ASSEMBLIES (for PD-P840F)



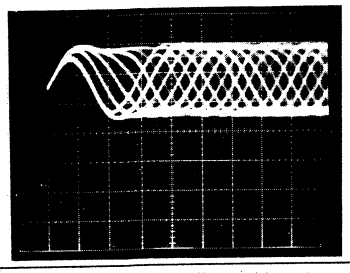
WAVEFORMS

Note: The encircled numbers denote measuring points in the schematic diagram.

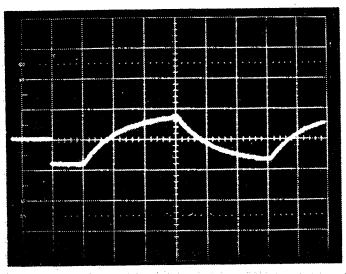
*1 50T-JUMP: After switching to the pause mode, press the manual search key.

*2 FOCUS-IN: Press the key without loading a disc.

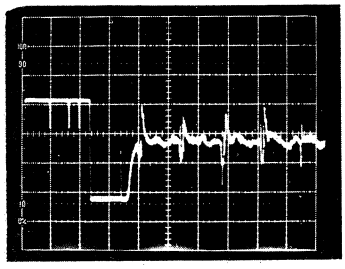
(2) TP1 - Pin 1 : PLAY MODE
(RF)
500mV/div 500nsec/div



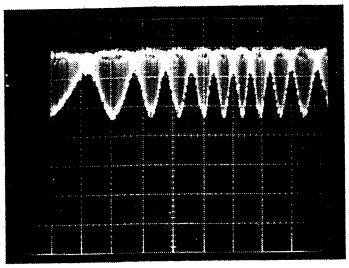
(5) IC201 - Pin 9 : FOCUS - IN (*2) MODE
(FODR)
1V/div 200msec/div



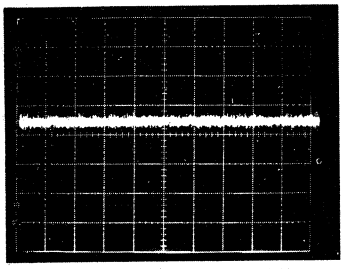
(7) IC202 - Pin 9 : TRACK SEARCH MODE
(SPDR)
2V/div 50msec/div



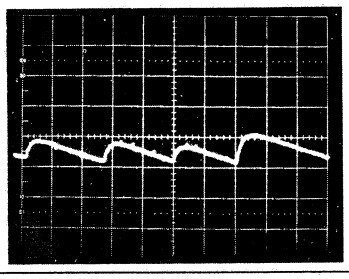
(2) TP1 - Pin 1 : TRACK SEARCH MODE
(RF)
500mV/div 200 µsec/div



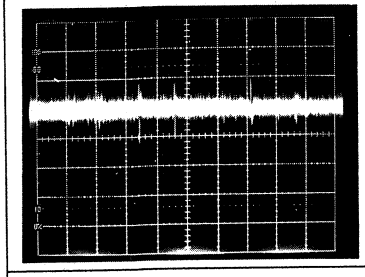
(5) IC201 - Pin 9 : PLAY MODE
(FODR)
1V/div 1msec/div



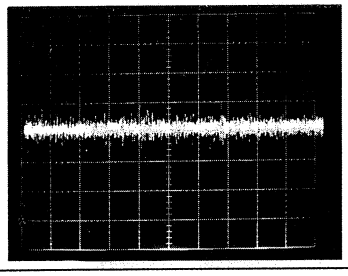
(8) IC201 - Pin 4 : PLAY MODE
(CADR)
200mV/div 2sec/div



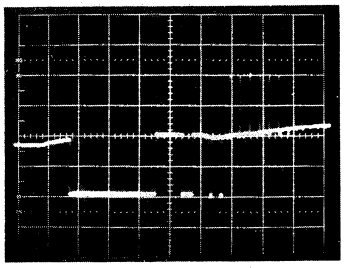
(3) TP1 - Pin 6 : PLAY MODE
(FOER)
100mV/div 10msec/div



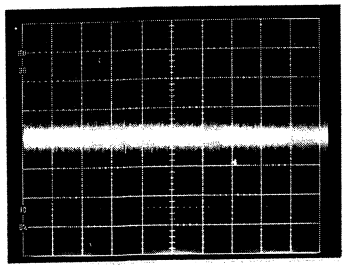
(6) IC201 - Pin 3 : PLAY MODE
(TRDR)
500mV/div 1msec/div



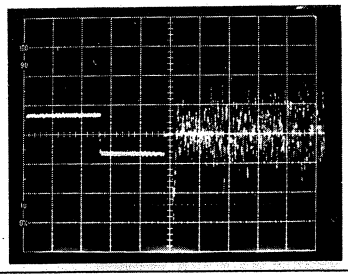
(8) IC201 - Pin 4 : TRACK SEARCH MODE
(CADR)
2V/div 500msec/div



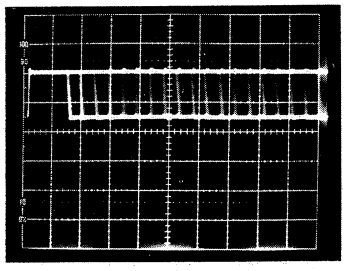
(4) TP1 - Pin 2 : PLAY MODE
(TRER)
1V/div 10msec/div



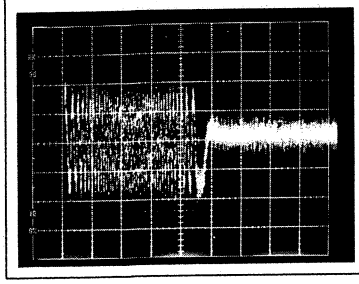
(6) IC201 - Pin 3 : 50T-JUMP (*1) MODE
(TRDR)
500mV/div 1msec/div



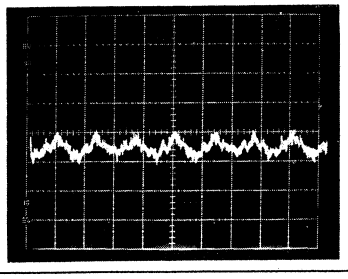
(9) IC151 - Pin 32 : PLAY MODE
(EFM)
2V/div 500nsec/div



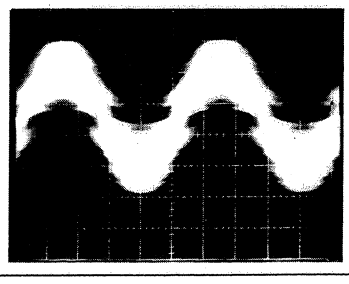
(4) TP1 - Pin 2 : 50T-JUMP (*1) MODE
(TRER)
1V/div 1msec/div



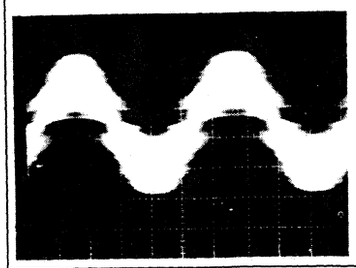
(7) IC202 - Pin 9 : PLAY MODE
(SPDR)
1V/div 50msec/div



(10) IC401 - Pin 9 : PLAY MODE (1kHz)
($\overline{LO}$) (D/A DATA OUT)
1V/div 200 µsec/div



(11) IC401 - Pin 10 : PLAY MODE (1kHz)
(LO)(D/A DATA OUT)
1V/div 200 μsec/div

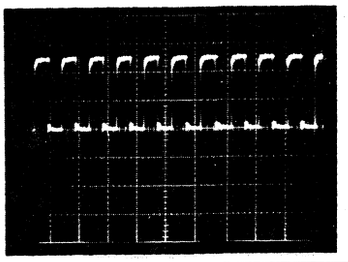


– GND

(22)

(26)

(16) IC301 - Pin 35 : PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div

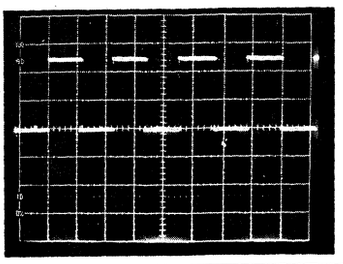


– GND

(22)

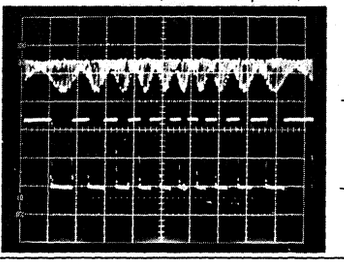
(27)

(18) IC301 - Pin 32 : PLAY MODE (1kHz)
(LRCK)
2V/div 10 μsec/div



– GND

(23) : TRACK SEARCH MODE
Upper : TP1 - Pin 1 (RF) 1V/div
Lower : IC151 - Pin 29 (MIRR)
2V/div 200 μsec/div

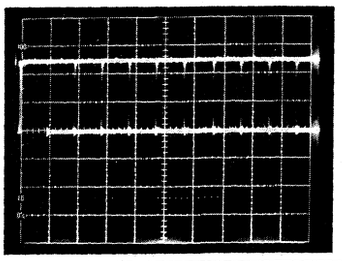


– GND

– GND

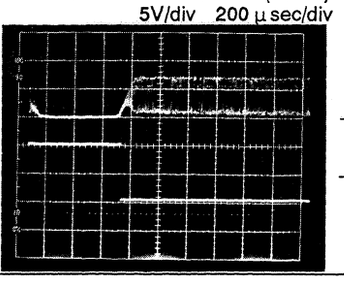
(28)

(19) IC301 - Pin 34 : PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div



– GND

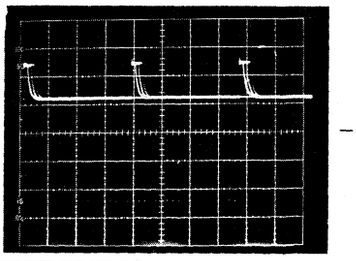
(24) : PLAY MODE
Upper : TP1 - Pin 1 (RF) 1V/div
Lower : IC151 - Pin 30 (DFCT)
5V/div 200 μsec/div



– GND

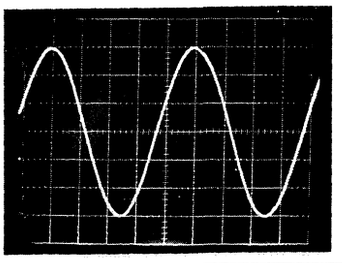
– GND

(33) IC301 - Pin 4 : PLAY MODE
(MDP)
2V/div 2 μsec/div



– GND

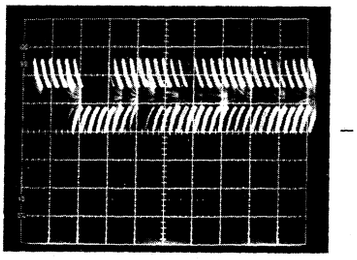
(21) PIN - OUTPUT : PLAY MODE(1kHz)
1V/div 200 μsec/div



– GND

(25)

(53) IC301 - Pin 20 : PLAY MODE
(PCO)
2V/div 10 μsec/div



– GND

Note : All voltages are measured in play mode (DISC 1 PLAY).
Disc is exist in the slot-in part.

IC401
(PD2026B(L))

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	15	5
2	0	16	0
3	5	17	5
4	5	18	0
5	2.4	19	2
6	2.6	20	5
7	0	21	5
8	0	22	5
9	2.6	23	5
10	2.4	24	5
11	5	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5

IC301
(CXD2500BQ)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0 to 0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1	53	2.5
14	0.9 to 1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3 to 4.8
27	2.5	67	5
28	0	68	0
29	0	69	2.1 to 3
30	0	70	5
31	1.3 to 2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC351
(PD3281A : PD-P840F)
(PD3280B : PD-F51)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	4.7	41	-25.2
2	0	42	-25.2
3	0	43	-25.2
4	0	44	-22.6
5	0	45	-22.6
6	0	46	-22.6
7	0	47	-22.6
8	5	48	-22.6
9	0	49	-22.6
10	2.3	50	-22.6
11	2.3	51	-22.6
12	5	52	5
13	5	53	5
14	0	54	5
15	0	55	5
16	0	56	5
17	0	57	5
18	0	58	5
19	5	59	5
20	0	60	5
21	0	61	5
22	0	62	0
23	0	63	5
24	5	64	0.4
25	0	65	5
26	0	66	0
27	5	67	5
28	0	68	5
29	5	69	5
30	0	70	5
31	4.5	71	5
32	-25.2	72	5
33	-25.2	73	5
34	-25.2	74	0
35	-25.2	75	5
36	-25.2	76	5
37	-25.2	77	5
38	-25.2	78	5
39	-25.2	79	5
40	-25.2	80	5

IC151
(CXA1372Q)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	-0.3	29	0
6	0	30	-5
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	-1.5
11	0	35	-1.7
12	0	36	5
13	0	37	-0.7
14	0 to 0.3	38	-1.5
15	0	39	0
16	-4	40	0.8
17	1.3	41	-5
18	0	42	0
19	-5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC201
(LA6520)

Pin No.	Voltage (V)
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0.1
12	8.4
FIN	-8.2

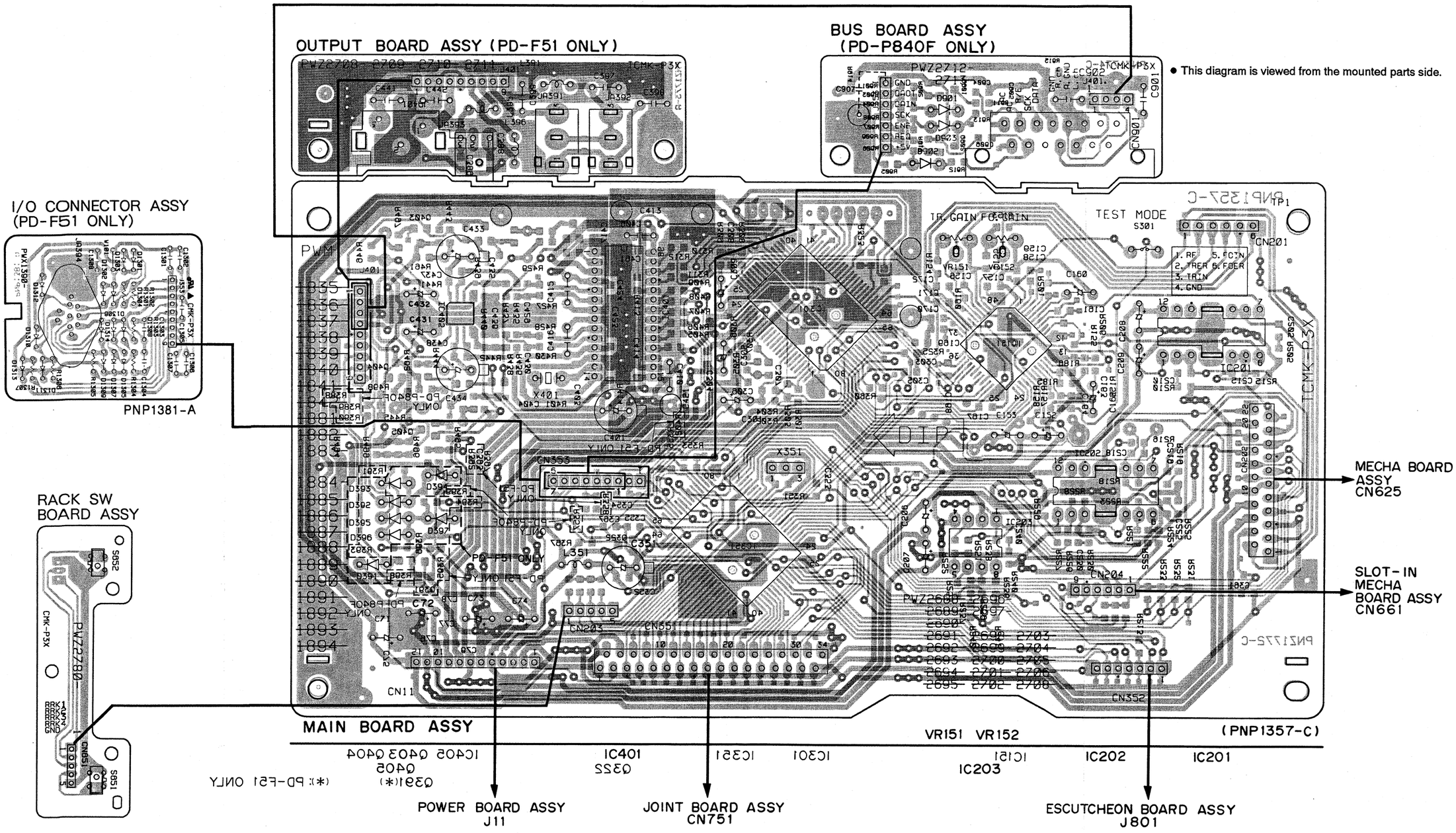
IC202
(LA6520)

Pin No.	Voltage (V)
1	0
2	0
3	0
4	0
5	0
6	0
7	1.7
8	1.7
9	0.5 to 0.8
10	0
11	0.1
12	8.4
FIN	-8.2

IC203
(LA6517)

Pin No.	Voltage (V)
1	0
2	8.3
3	0
4	-8.7
5	0
6	0
7	0
8	0

PCB-3

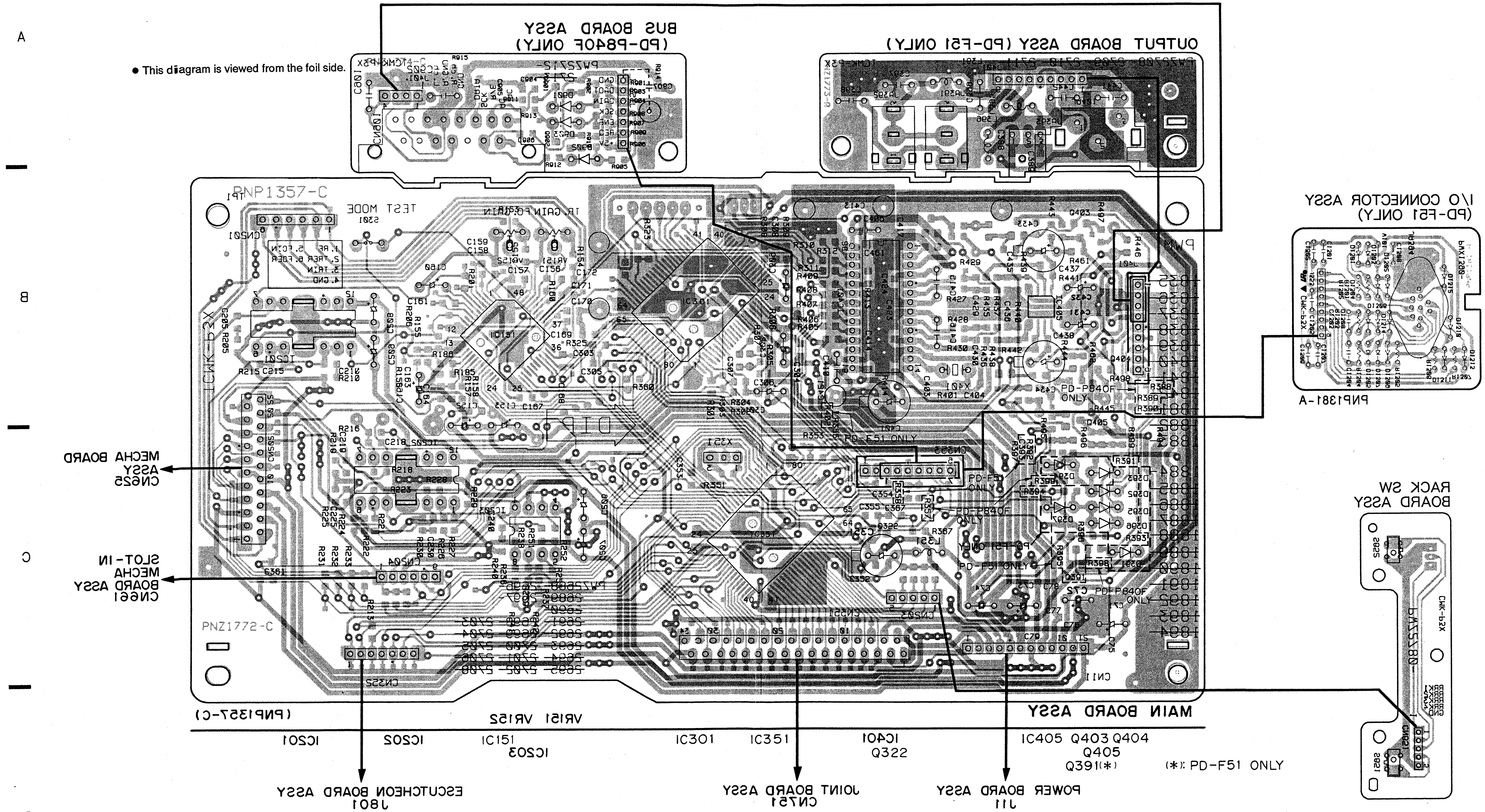


- This diagram is viewed from the mounted parts side.

- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.

- R388~R390, R398 and R399 are not indicated on the schematic diagram because of those are 0 Ω chip resistors.

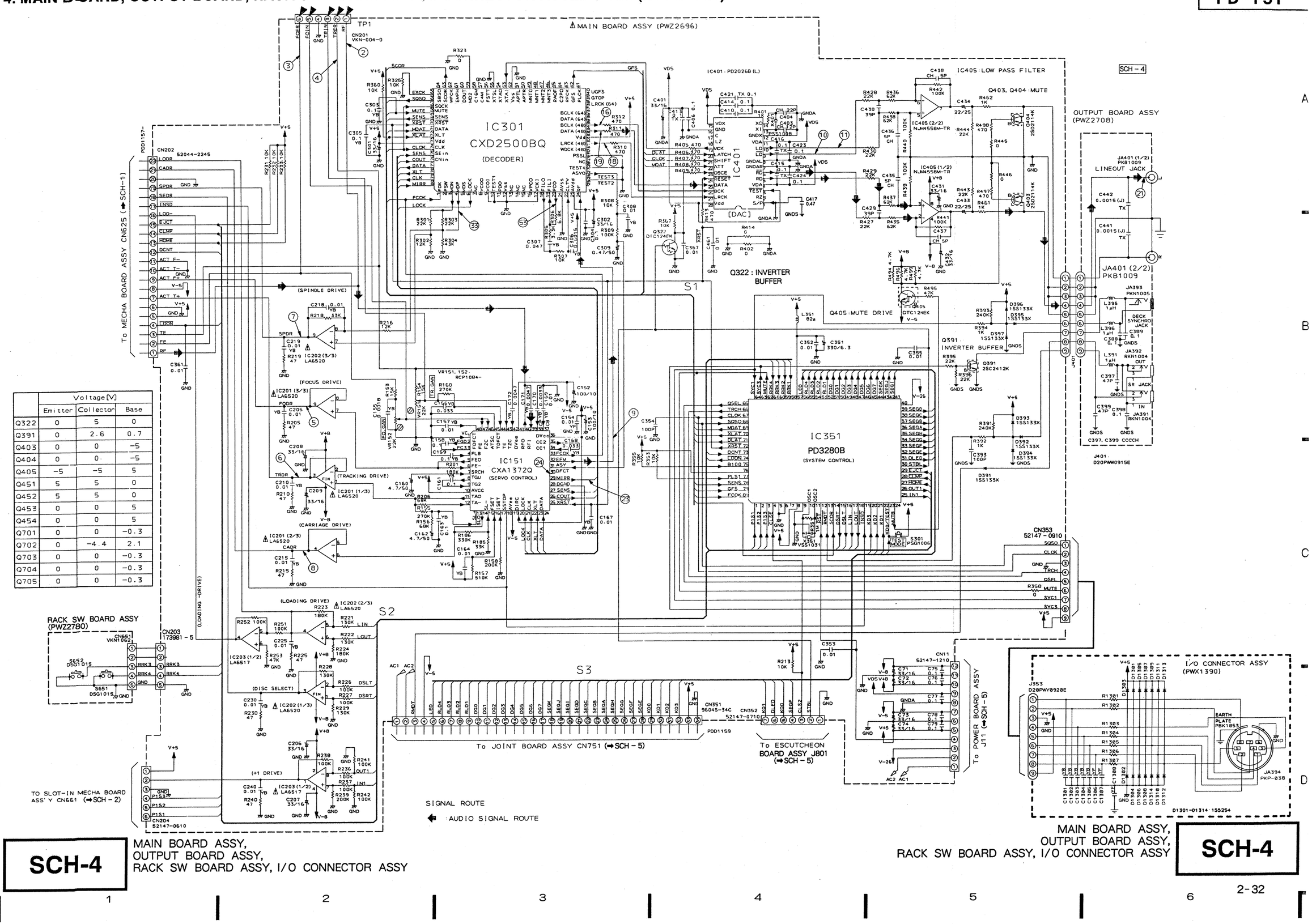
PCB-3



● This diagram is viewed from the gray colored foil side.
● This PCB is double sided.

● R388–R390, R398 and R399 are not indicated on the schematic diagram because of those are 0 Ω chip resistors.

4. MAIN BOARD, OUTPUT BOARD, RACK SW BOARD AND I/O CONNECTOR ASSEMBLIES (for PD-F51)



	Voltage[V]		
	Emitter	Collector	Base
Q322	0	5	0
Q391	0	2.6	0.7
Q403	0	0	-5
Q404	0	0	-5
Q405	-5	-5	5
Q451	5	5	0
Q452	5	5	0
Q453	0	0	5
Q454	0	0	5
Q701	0	0	-0.3
Q702	0	-4.4	2.1
Q703	0	0	-0.3
Q704	0	0	-0.3
Q705	0	0	-0.3

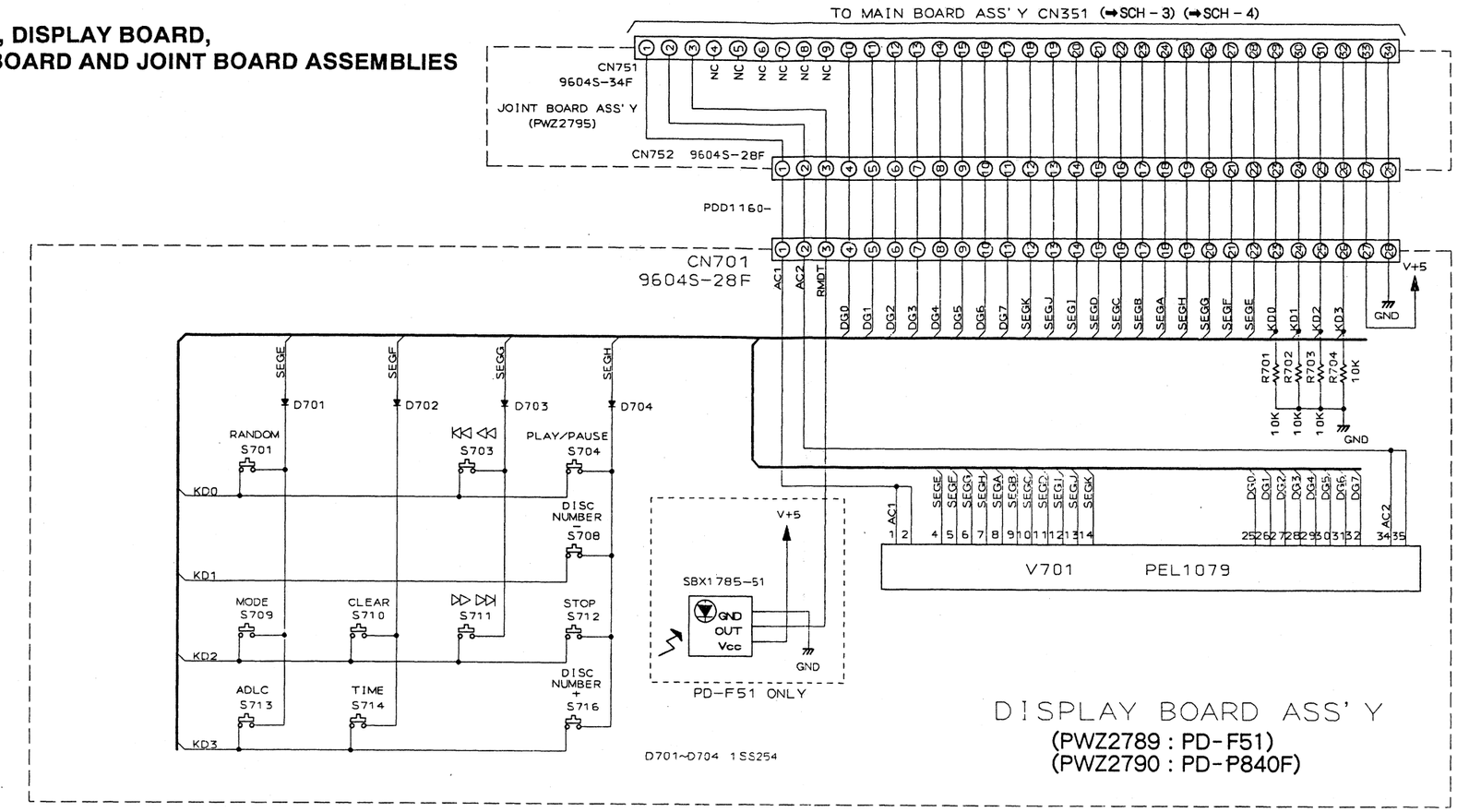
SCH-4

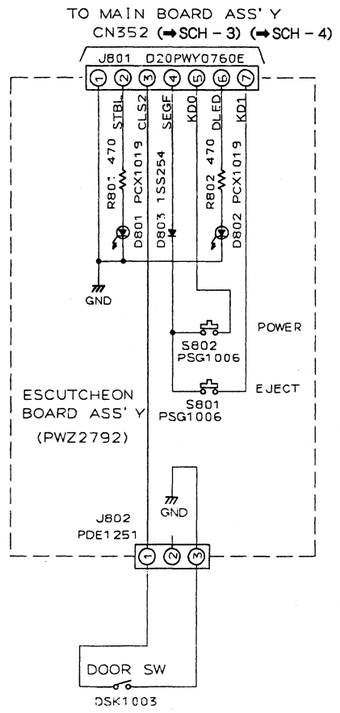
MAIN BOARD ASSY,
OUTPUT BOARD ASSY,
RACK SW BOARD ASSY, I/O CONNECTOR ASSY

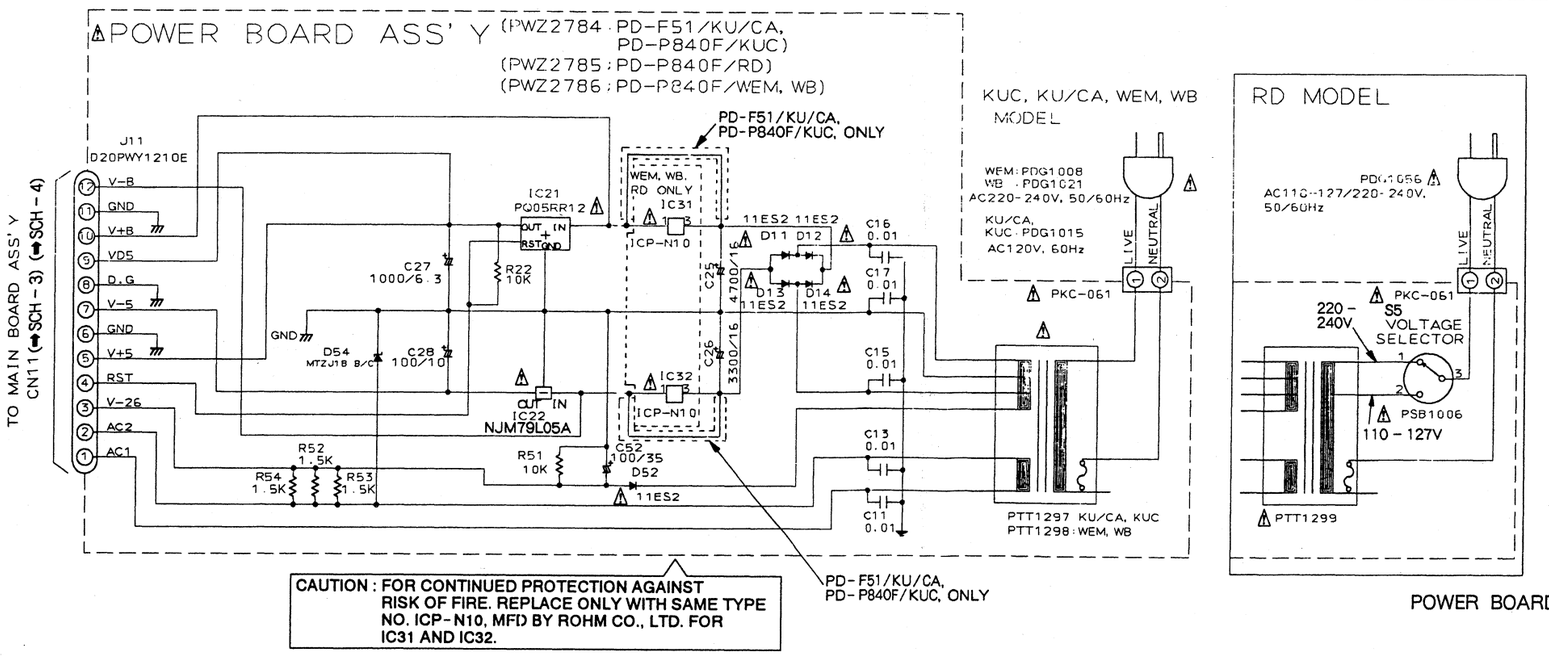
SCH-4

MAIN BOARD ASSY,
OUTPUT BOARD ASSY,
RACK SW BOARD ASSY, I/O CONNECTOR ASSY

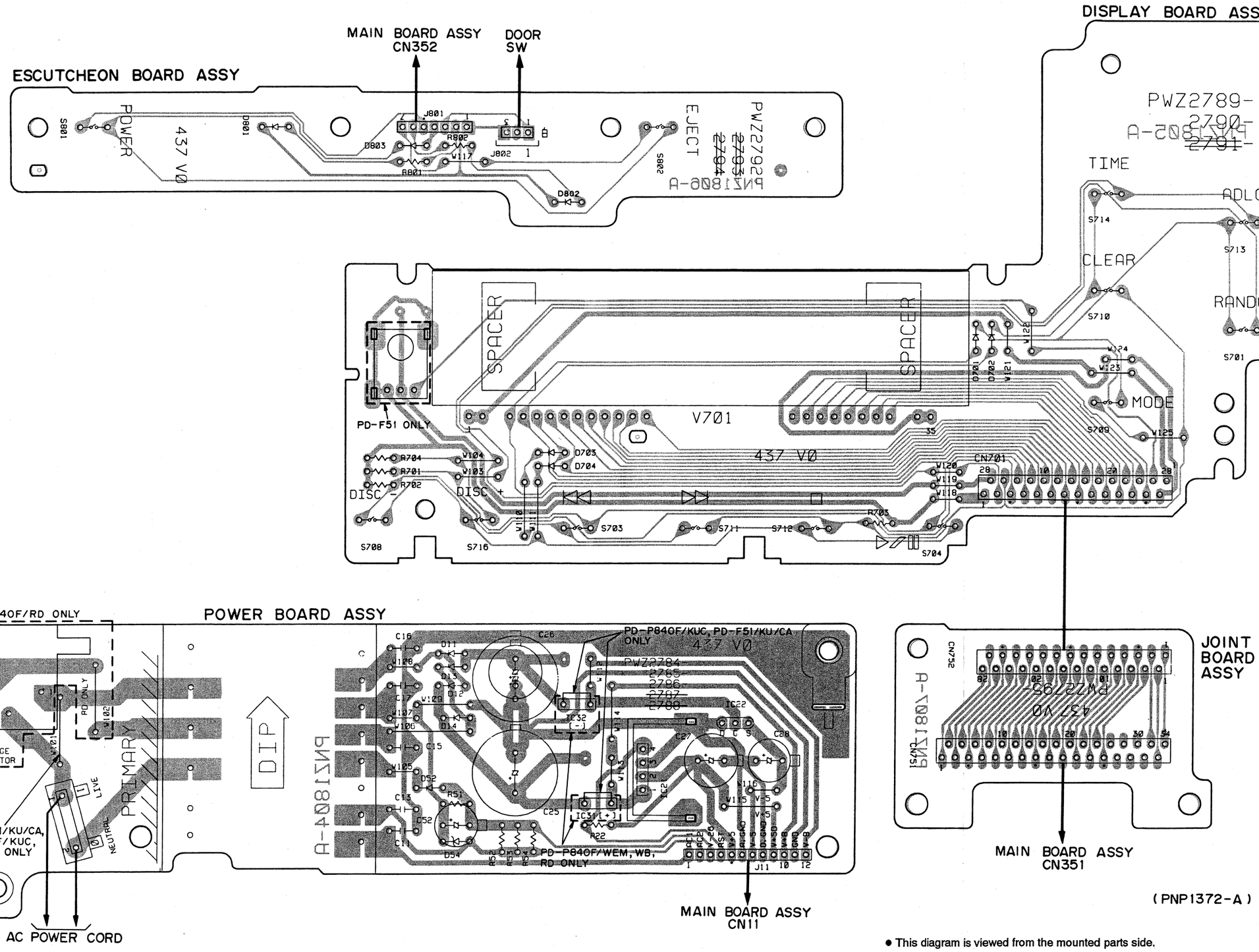
5. POWER BOARD, DISPLAY BOARD, ESCUTCHEON BOARD AND JOINT BOARD ASSEMBLIES







PCB-4

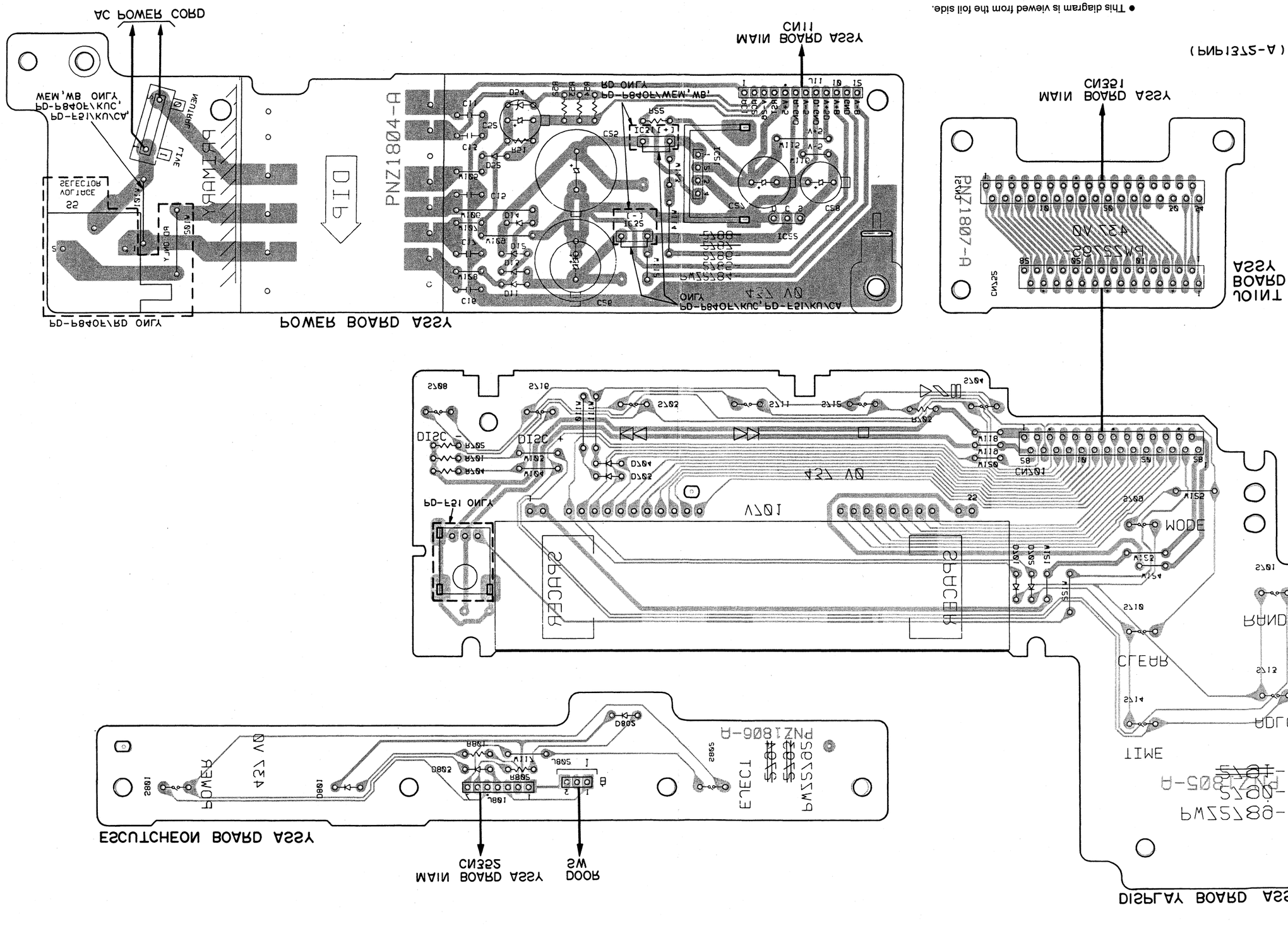


(PNP1372-A)

● This diagram is viewed from the mounted parts side.

● This diagram is viewed from the foil side.

(PNP1575-A)



PD-P21
PD-P8404E